ANNUAL REPORT

OF THE

Cochituate Water Board

FOR

1872-73.

City Document. — *No.* 103.

CITY OF BOSTON.

REPORT

OF THE

COCHITUATE WATER BOARD

TO THE

CITY COUNCIL OF BOSTON,

FOR THE YEAR ENDING

APRIL 30, 1873.

CITY OF BOSTON.

In Board of Aldermen, May 5, 1873.

Ordered, That the Cochituate Water Board be and hereby are authorized to submit their annual report in print; the expense thereof to be charged to the appropriation for Printing.

Passed in Common Council.

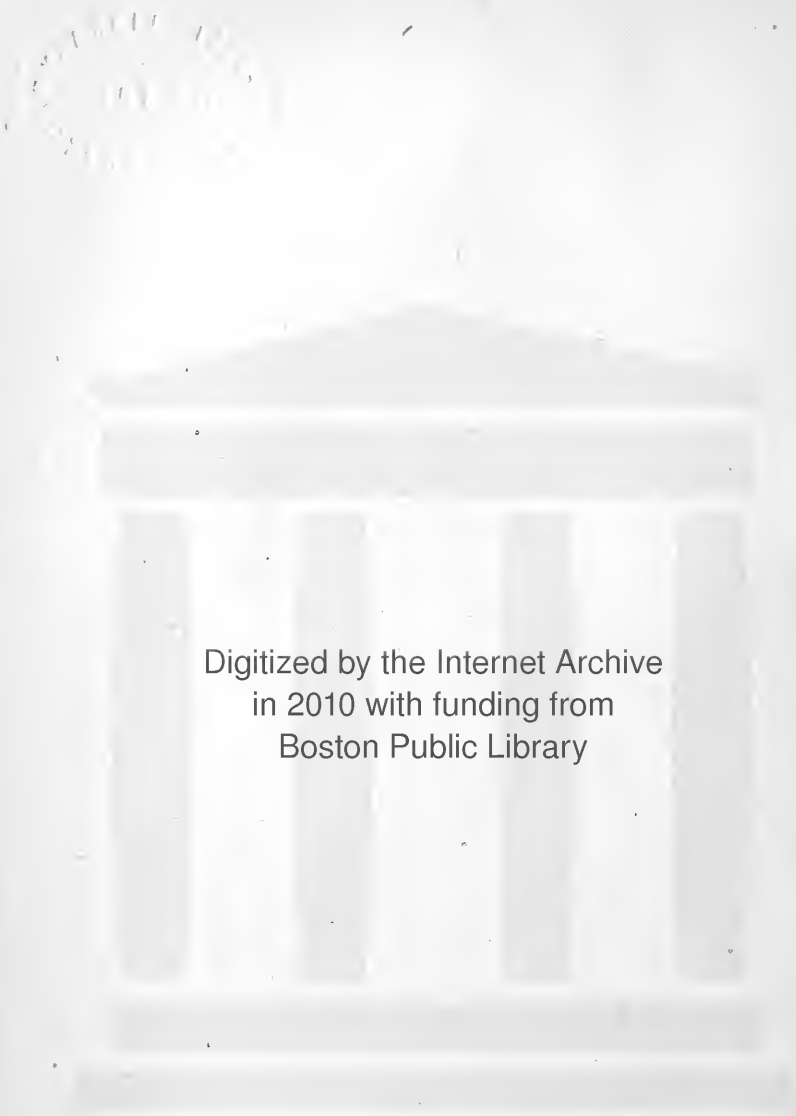
Came up for concurrence.

Read and concurred.

Approved by the Mayor May 6, 1873.

A true copy.

S. F. McCLEARY, *City Clerk.*



CITY OF BOSTON.

City Hall, Cochituate Water Board Office.
May, 1873.

To the City Council of the City of Boston: —

In accordance with the requirements of the City Ordinance, the Cochituate Water Board herewith submit their annual report for the year ending April 30th, 1873, together with the reports of the Clerk of the Board, the Superintendent of the Eastern and Western Divisions, Water Registrar, and City Engineer, to which they would refer the City Council for detailed statements of the progress and condition of the Water Works during the year.

An examination of these reports will show the works to be in a very satisfactory condition.

At the date of the last annual report, the Board were especially engaged in the construction of a temporary connection between Sudbury River and Lake Cochituate; the channel was completed in June, 1872, and on the 19th day of that month, the water from Sudbury River was let in, and (with sundry interruptions) continued to flow into Lake Cochituate until the 17th day of September, when the channel was closed, and has not since been used. The amount of water thus conveyed into Lake Cochituate cannot be accurately stated, but is computed by rough gauging to be 1,676,600,000 gallons; a sufficient quantity to supply the city for more that one hundred days.

After the completion of this temporary connection, the City Engineer engaged in making surveys and plans for the loca-

tion and construction of a permanent conduit of great capacity to convey the water from our new source of supply (Sudbury River) to Chestnut Hill Reservoir — a distance of about sixteen miles.

His report upon this subject was made to this Board in January last, and duly transmitted to the City Council, and by them approved.

An appropriation of five hundred thousand dollars has been made for the commencement of the work. A force will at once be put into the field, and portions of the work got under contract at an early day.

To render the supply from Sudbury River the most efficient, it is necessary to build two or more storage reservoirs, of liberal dimensions, upon the river, and, by means of a conduit, divert the water into Farm Pond at Framingham, thence by a second conduit to Chestnut Hill Reservoir. To reach the reservoir, and by the most desirable route, will involve the construction of two or more tunnels through solid rocks. The distance to be tunnelled will probably amount to seven or eight thousand feet.

The size of the conduit will be eight and one-half feet diameter,— over two feet larger than the conduit which connects Lake Cochituate with Chestnut Hill.

It is estimated that this work, when complete, will cost nearly five million dollars, — a vast sum in itself considered; but the advantages to be derived from its expenditure can be appreciated in the fact that it will ensure the City of Boston an ample water supply for the next half century. The work will be pursued with energy, but much time (three years and perhaps more) will be required for its completion.

The *temporary* connection between Sudbury River and Lake Cochituate will be kept intact until the permanent works are constructed.

The present supply of water at the lake renders it probable

that no demands will be made upon Sudbury River during the year 1873.

The average level of the water in the lake for the year ending January 1st, 1873, was $6\frac{91}{100}$ feet above the level of the bottom of the conduit; the average of the previous year was $6\frac{50}{100}$. The level of the water would have fallen far below the previous year except for the introduction of Sudbury River.

CONSUMPTION OF WATER.

The average daily consumption of water for the year ending Dec. 31, 1872, was 15,063,400 gallons; an increase of 1,117,900 per day, as compared with the previous year.

The rapid growth of the city in population and mechanical pursuits increases the demand for water, and the wisdom of securing an additional supply is daily made more apparent.

The largest consumption of water was in the month of November, averaging nearly *eighteen million* gallons daily. This large demand was materially increased by the great conflagration which occurred on the 9th and 10th days of November.

By the records in the office of the City Engineer, it appears that the quantity of water used, during the thirty-five hours of the fire, was sufficient to flood the entire area of the "burnt district" (estimated at 60 acres) to a depth of $10\frac{1}{2}$ inches; and would cover the area occupied by the buildings burned, to a depth of nearly 14 inches.

The income from water rates has been $851,474.31, being an increase over the previous year of $63,222,26, and the estimated income for the year ending April 30, 1874, is $875,000.

The expenses have been as follows: —

For the current expenses		$253,963 58
Interest and premium on water debt . .		702,177 21
		$956,140 79
The Treasurer has credited the Water Works for the same year		$901,799 18
The balance shows an excess of expenditures over income		$54,341 61
Expended in Wards 13, 14, 15 and 16 .		107,044 10
" on New Water Pipe, East Boston .		8,732 21
" " High-Service, South Boston .		26,832 25
" " Add'l Water Supply	$61,278 83	
Less income . .	223 50	
		$61,055 33
		$258,005 50
Cost of the works May 1, 1872 . . .		9,602,950 74
Net cost to May 1, 1873		$9,860,956 24

EASTERN DIVISION.

This division comprises all the works lying east of the Brookline Reservoir, including the distributing pipes and reservoirs in the city, and is under the care of Mr. E. R. Jones.

During the year there has been laid ninety-four thousand and forty-six (94,046) feet of main pipe, equal to about eighteen miles; total length of main pipes laid from the commencement of the works to present time is two hundred and thirty-seven miles.

Connected with the mains are two thousand six hundred and fifty-eight fire hydrants, — an increase of two hundred and twenty-five during the year. Of the hydrants now in use eleven hundred and forty are of the Lowry pattern, and this

pattern is now exclusively used, wherever new mains are laid or alterations made.

The hydrants are located as follows: —

Boston proper	1,105
South Boston	394
East Boston	236
Boston Highlands	561
Dorchester	320
Brookline	9
Charlestown	11
Chelsea	8
Deer Island	14
Total	2,658

The number of service pipes laid during the year is (2,195) two thousand one hundred and ninety-five, measuring three thousand two hundred sixty-six feet, or about twelve miles.

The work of connecting a portion of South Boston with the "high-service" system, and mentioned in our last report, has been completed, and is very satisfactory to the water-takers in that section of the city.

The connection between the Mystic (Charlestown) Water Works and Beacon Hill has been made by means of large-sized pipes, and, in case of any emergency or disablement of works in Boston, or Charlestown, great benefits would be derived.

The relaying of main lines through the "burnt district" has commenced, and will be continued as fast as new lines of streets are determined, and other circumstances permit.

In most cases the new mains will be of increased capacity, and all new hydrants will be of the Lowry pattern.

The City Engineer has been called upon to examine the present mains, by which the easterly section of the city is supplied, and his report indicates a need of greater capacity

in the branch mains feeding that section. This subject will receive the early attention of the Board.

HIGH-SERVICE.

In our last report, allusion was made to the satisfaction which the more elevated portion of our city derived from this branch of the service, and that the day was not far distant when it would be necessary to increase our pumping facilities.

The demands upon this service have exceeded any expectations; the average amount pumped daily for the year 1872 was 633,499 gallons, — an increase of more than thirty per cent. over the previous year.

The best method for the increase of our facilities has been considered by the City Engineer, and his views submitted to the City Council through this Board, and may be found in City Document No. 38 of the current year.

His plans contemplate the erection of a reservoir on Parker's Hill (Boston Highlands), and application has been made to the Legislature for authority to take land necessary for its erection.

DISTRIBUTING RESERVOIRS.

The Beacon Hill Reservoir is only useful for the storage of a quantity of water for use in case of fire, or accident to the mains in its immediate vicinity; and the same is substantially the fact with the reservoirs at East and South Boston.

If a reservoir should be erected on Parker's Hill for the benefit of the high-service, there is no reason why the Beacon Hill Reservoir could not be abandoned with entire safety, as the establishment of a reservoir, at the point named, would command and amply protect the Beacon Hill District, both for fire and domestic purposes.

WESTERN DIVISION.

This division comprises the lake and all that portion of the work lying between the lake and the gate-house at the Brookline Reservoir, and is under the care of Mr. Albert Stanwood as Superintendent.

The new source of supply from Sudbury River has added greatly to the importance of this division, and will materially increase the duties of the Superintendent and others connected with the works.

The annual examination of the conduit (omitted last year on account of the low stage in the lake) was made on the 12th and 13th days of October last, and was found to be in good general condition; it appeared that some repairs were required, which have been made.

CHESTNUT HILL RESERVOIR.

This reservoir is in excellent condition, and one of the most valued features of the works. Its immense storage capacity, 731,472,429 gallons, affords ample protection to the city in case of accident to the conduit, and is at all times kept at such height as to answer all demands that are likely to be made upon it.

BROOKLINE RESERVOIR.

The land and buildings are in good order. This reservoir should be thoroughly cleaned out at an early day.

WATER REGISTRAR'S DEPARTMENT.

The number of water-takers now entered for the year 1873 is 40,688, — an increase of 1,972 over the previous year.

Number of cases in which the water has been turned off for non-payment of rates, during the year, is 933; of this number 751 have been turned on again, and 182 still remain off.

Meters still continue in use in quite a number of establishments, embracing hotels, railroads, stables, manufactories, saloons, and buildings occupied by several tenants.

Whole number of meters now in use, 955.

The number of the various kinds of water fixtures, on the premises of water-takers, January 1, 1873, was 159,654, — an increase of 13,868 during the year.

CHARLES H. ALLEN, *President*,
JOHN A. HAVEN,
ALEXANDER WADSWORTH,
EDWARD A. WHITE,
LEONARD R. CUTTER,
EDWARD P. WILBUR,
WILLIAM G. THATCHER.

REPORT OF THE CLERK.

OFFICE OF THE COCHITUATE WATER BOARD,
BOSTON, May 1, 1873.

CHARLES H. ALLEN, Esq.,
President of the Cochituate Water Board: —

SIR, — The following is a statement of the Expenditures and Receipts of this department for the year commencing May 1, 1872, and ending April 30, 1873: —

EXPENDITURES.

Carting	$810 00
Plumbing shop	62 50
Damage	3,232 54
Taxes	1,431 13
Upper yard	4,593 03
Main pipe	36,416 81
Service pipe	8,526 18
Rent of Eastern avenue wharf and salary of agent	3,222 33
Telegraph	1,457 11
Hydrants	4,453 37
Stopcocks	5,668 82
Tolls and ferriage	26 00
Lake	3,260 58
Proving yard, for stock, etc.	2,373 06
Stable	4,628 80
Amount carried forward,	$80,162 26

Amount brought forward,	$80,162 26
Laying main pipes	375 08
" service "	90 00
Reservoir — East Boston	126 50
" Beacon Hill	578 47
" South Boston	197 75
" Brookline	3,002 08
" Chestnut Hill	14,612 31
Meters	5,594 00
Maintaining Meters	2,779 39
Repairing stopcocks	1,857 62
" main pipe	16,350 45
" service pipe	11,881 19
" streets	6,510 25
" hydrants	9,037 42
Travelling expenses	177 40
Fountains	1,585 36
Postage and expressage	29 48
Blacksmith shop, for stock, etc.	189 41
Tools	3,134 55
Salaries (including clerks in Water Registrar's Department)	21,999 99
Inspectors	8,824 50
Off and on water	11,221 95
Printing (including Water Registrar's and Superintendent's)	1,275 42
Miscellaneous expenses	2,030 22
Stationery (including Water Registrar's and Superintendent's)	341 86
Wages — proving yard	6,912 50
" blacksmith's shop	816 57
" laying main pipe.	12,567 35
" " service pipe	10,408 08
Amount carried forward,	$234,669 41

Amount brought forward,		$234,669 41
Wages — laying high-service		4,148 50
Aqueduct repairs		1,240 69
Advertising		46 23
Hydrant and stopcock boxes		3,117 61
High-service		4,646 44
Pumping works at Lake Cochituate		3,694 70
Chestnut Hill Driveway		4,891 19
Water to Deer Island		3,289 31
Wards 13, 14, 15, and 16		107,044 10
Additional supply of water		61,278 83
New water pipe, East Boston		8,732 21
High-service, South Boston		26,832 25
Total amount drawn for by the Board		$463,631 47

And which is charged as follows: —

To Water Works	$251,563 58	
" Chestnut Hill Driveway	4,891 19	
" Water to Deer Island	3,289 31	
" New water pipe, E. Boston	8,732 21	
" Wards 13, 14, 15, and 16	107,044 10	
" Additional supply of water	61,278 83	
" High-service, South Boston	26,832 25	
	$463,631 47	
Amount charged to Water Works		$455,450 97

RECEIPTS.

Received for hydrants and maintaining same for Fire Department	$29,652 00	
" " pasturage and rent of land	137 00	
Amounts carried forward,	$29,789 00	$455,450 97

Amounts brought forward,	$29,789 00	$455,450 97
Received for sale of old Tool House	15 00	
" " sale of hay at C. H. Reservoir	50 00	
" " sale of grass at E. B. Reservoir	20 00	
" " sale of coal at lake, not used for pumping engines	100 00	
" " use of engine loaned E. Boston Improvement Co.	75 00	
" " sale of old junk, etc., at yard	57 87	
" " rent of part of Eastern Ave. Wharf	300 00	
" " sale of old mattresses, etc., at So. Framingham	223 50	
" " off and on water for repairs	1,990 00	
" " fines for waste	379 00	
" " pipe laying, repairing, etc., etc.,	15,979 00	
		48,978 37
Net amount to Water Works,		$406,472 60

Which is credited to —		
Additional supply of water,	$223 50	
Water Works,	48,754 87	
		48,978 37

Amount drawn for the Water Works, not including Chestnut Hill Driveway, Water to Deer Island, Wards 13, 14, 15, and 16, new water pipe to East Boston, High-Service, South Boston, or additional supply of water		$251,563 58

EXTENSION OF THE WORKS.

Main pipe	$36,416 81	
Wages laying main pipe .	12,567 35	
Laying main pipe, stock, etc.	375 08	
Service pipe . . .	18,526 18	
Wages laying service pipe .	10,408 08	
Laying service pipe . .	90 00	
	————	68,383 50
Amount of expenses from April 30, 1872, to May 1, 1873		$183,180 08

Expenditures and Receipts on Account of the Water Works, to May 1, 1873.

Amount drawn by Commissioners . .	$4,043,718 21
" " " Water Board, in 1850 .	366,163 89
" " " Cochituate Water Board, from January 1, 1851, to May 1, 1872 .	6,647,558 36
Amount drawn from April 30, 1872, to May 1, 1873, for Water Works . . .	455,450 97
Amount carried forward,	$11,512,891 43

Amount brought forward,		$11,512,891 43
Amount paid the City Treasurer by the Commissioners .	$47,648 38	
Amount paid by Water Board, 1850	8,153 52	
Amount paid by Cochituate Water Board to May 1, 1872	315,789 92	
Amount paid April 30, 1872, to May 1, 1873 . .	48,978 37	
		420,570 19
Net amount drawn from the Treasurer, by the Commissioners and Water Boards, for the Water Works		$11,092.321 24
Gross payments (including interest, premium, etc.) for account of the Water Works		21,472,585 44
Gross receipts		11,611,629 20
Net cost to the city, May 1, 1873 .		$9,860,956 24

Respectfully submitted,

J. A. WIGGIN,

Clerk of the Cochituate Water Board.

COST OF THE WORKS TO MAY 1, 1873.

WESTERN DIVISION.

Amount paid Wm. H. Knight, for the lake			$100,000 00
" " " " " " factories, $50,000, less amount on account of the sale of land and machinery, and insurance at the time of the fire			20,818 22
Expense of raising the lake two feet, including damages			28,002 18
Cost of roads, bridges and swamps			38,332 48
Gate-house at the lake			29,907 12
Dam at the outlet of the lake			8,458 20
Dudley pond, lower dam, and making connections with the lake			18,982 23
New dams, and improvement at the lake			19,610 90
Total cost of lake dep't, *not including land*			$264,111 33
Land and land damages, less credit for land sold		$225,523 15	
Constructing brick conduit		817,717 73	
Brookline Reservoir,			
land	$58,418 92		
Construction	108,301 92		
Gate-house	33,356 37		
		200,077 21	
Compensating reservoirs, less amount received when sold		66,859 80	
Engineering expenses on the Western Division		69,900 31	
Miscellaneous expenses on the Western Division		112,715 58	
Am'ts carried forward,		$1,492,793 78	$264,111 33.

Am'ts brought forward,		$1,492,793 78	$264,111 33
Payments on account of the "new supply of water"		63,581 64	
Chestnut Hill Reservoir, land construction		2,449,982 07	
			4,006,357 49
Total cost of Western Division			$4,270,468 82

EASTERN DIVISION.

Main and service pipes		$3,102,987 33	
Beacon Hill Reservoir, land	$145,107 10		
Construction	368,426 11		
		513,533 21	
South Boston Reservoir, land	55,103 23		
Construction	35,804 87		
		90,908 10	
East Boston Reservoir, land	23,862 50		
Construction	46,328 59		
		70,191 09	
Engineering expenses on the Eastern Division		31,403 02	
Machine shop and pipe yards		99,463 97	
Hydrants and stopcocks		123,298 59	
Proving pipes		35,983 96	
Meters		126,758 94	
Miscellaneous expenses on the Eastern Division,		569,421 50	
Payment on account of Wards 13, 14, and 15		700,983 03	
Payment on account of Ward 16		375,000 00	
Am't carried forward,		$5,839,932 74	

Am't brought forward,	$5,839,932 74	
Payment on account of Wards 13, 14, 15, and 16 . .	299,999 14	
Payment on account of new main to East Boston . .	24,878 08	
Payment on account of new water pipe, East Boston .	20,999 43	
Payment on account of high-service, South Boston . .	26,832 25	
Total cost of Eastern Division . .		$6,212,641 64
Total cost of Eastern Division	$6,212,641 64	
" " " Western "	4,270,468 82	
Total cost of Eastern and Western Divisions		$10,483,110 46
Net cost after deducting income from all sources		$9,860,956 24

REPORT OF THE CITY ENGINEER.

OFFICE OF THE CITY ENGINEER, CITY HALL,
BOSTON, May 1st, 1873.

CHARLES H. ALLEN, ESQ.,
President of the Cochituate Water Board:—

SIR, — In compliance with the requirements of the ordinance on Engineer's Department, the following report, upon matters pertaining to water supply, is respectfully submitted: —

LAKE COCHITUATE.

The monthly average heights of the water surface of the lake, above the bottom of the conduit, will be found in the table on page 52.

On May 1st, 1872, the height was 5 feet $3\frac{1}{2}$ inches; on May 28th, it was 4 feet 10 inches; and from that date it rose continuously till April 3d, of this year, when the lake was full and wasting largely at the outlet-dam, the waste-gate being open. On May 1st, the surface had been drawn down to 13 feet 1 inch above the conduit bottom.

At the beginning of last year there was no water in store, — in fact, at that time and until April 13 the conduit was supplied by means of pumps, — and as very little snow fell during the winter and the under-ground water-table had been very much lowered by the drought of the preceding season, great apprehension was felt that the Cochituate District alone would prove insufficient to maintain the supply to the city during the following summer.

Application to the Legislature was therefore made for an

act authorizing the city to take water from a new source, and to build works for immediate relief.

An act was passed, early in April, granting the right to take water from the Sudbury River and to turn it into Lake Cochituate, and the work required for this purpose was at once begun.

In a report to your Board, made last May, a full description of this work (then in progress) was given. Its chief features are a wooden dam across the river, and a ditch from Farm Pond to Beaver Dam Brook, passing through swamp and meadow lands of a nature that requires the sides of the ditch to be sustained by planking and bracing. With the exception of a bridge over the outlet of Farm Pond, it is now finished. It is of a temporary character, intended, with proper attention and repairs, to last four or five years, or until a new conduit may be built connecting the river with Chestnut Hill Reservoir.

Water was first let into the ditch June 19th, and was run each night till June 25th, to draw down the level of the pond and permit the deepening of the mouth of the ditch. On June 25th, water from the river was turned into the pond, and from thence let into the lake, and the flow was continued uninterruptedly until August 7th, when it was stopped to finish the side planking of the ditch. August 16th, the communication was again opened, and was kept open till September 17th, when it was closed for the season.

The quantity of water received from the river during the summer cannot be very accurately ascertained, as during the time of flow, a number of changes were made in the section and capacity of the water-course. Rough gaugings were made, however, and the quantity computed from them is 1,676,600,000 gallons; or equal to the supply required in the city taken at the average for the year, for 110 days.

On page 50 will be found a table giving as has been cus-

tomary, the rainfall on the lake water-shed, amount of water consumed and wasted, rise or fall of the lake-surface, total available amount of water and available percentage of rainfall received into the lake.

The figures of this table are but roughly approximate, owing to the want of accurate data for the calculations. Although it would cost a considerable sum to provide the means for properly measuring the flow in the conduit, the waste at the dam, the average rainfall for the entire water-shed, etc., yet the value of the results to be obtained from reliable measurements would fully warrant the necessary expenditure.

The figures for 1872, in columns 4, 6 and 7 of the table, include the quantity of water received from the Sudbury River, but those in the last three columns refer to the water-shed of the lake alone.

It will be noticed that had no water been received from the river, the lake-surface, instead of rising, would have stood at the end of the year somewhat lower than at the beginning.

CONDUIT.

A thorough examination of the interior of the conduit, from the lake to Chestnut Hill Reservoir, was made October 12th and 13th.

It was found in a better condition than had been anticipated, but a number of new cracks were discovered, and many of the old ones had widened.

The following transcript of the record made by Mr. Wiggin, clerk of the Water Board, will show the number and position of the cracks; those marked with an asterisk being the new ones, or the ones never before recorded.

Joseph P. Davis, Esq., *City Engineer:* —

Dear Sir: Entered the conduit at lake at 9.15 A. M., Oct. 12th.

For a long distance the bottom is very sandy, and the sides are covered with a substance resembling sponge. There are no cracks, however.

We reached Dedman's Brook at 11.45, and re-entered the conduit at 1.15. At station *160 is a crack in top arch. 169 slight crack, also at 179 and 180.

The conduit so far from Dedman's Brook is very clean.

At 182 and 3 is a crack about $\frac{1}{4}$ inch wide.

*228 to 230, slight crack.

247 and 8, crack in top arch quite large.

254, bottom quite muddy.

*255 to 57$\frac{1}{2}$, crack, also at *259.

Between 272 and 3 is a large crack, that has been repointed, but has not started.

274, quite a crack in several places.

284, muddy again.

*292 to 6, small cracks.

298, muddy.

13 to 14, crack, which looks as if it had spread where it was repointed, and water drips through; sand in bottom, also.

*15$\frac{1}{2}$ to 16$\frac{1}{2}$, quite a crack in top.

*17 to 18, large crack; also sandy.

Reached Grantville Waste Weir at 4.05, which is Station 49$\frac{1}{2}$. Conduit very clean.

Between *51 and 2, slight crack.

" 53 and 5, " "

" *64 and 5, " "

" 77 and 8, several cracks.

107 and 9$\frac{1}{2}$, crack that was repointed; has started, especially at 109.

Reached Lower Falls, Station 111$\frac{1}{2}$, at 5.10.

SUNDAY, Oct. 13th.

Entered conduit at 10.35.

142–3, little sandy.

*160, each side of man-hole is a crack.

163–4, sandy.

Between 174 and 80, some moss on each side of conduit.

196–7, crack.

216 to 218½, several bad cracks in top and on left.

232½ to 34, " " " "

242½ to 44, " " " " " also mossy.

Reached Newton Centre, Station 9, at 12.50; left again at 1.20.

*50½ to 52½, bad cracks. Conduit very clean.

Reached ventilator at 2.17; left again 2.40.

*86½, crack on right.

88 to 90, considerable fungus.

93, crack on right.

*103½, crack in top.

108½–110, several cracks, been repointed, not started.

*115 to 117, crack.

118, crack on right.

119–124½, several bad cracks on each side and top. Repointing is all right.

Bottom of conduit very rough.

125½ to 26½, slight crack.

*128–9, crack in top.

Reached intermediate gate-house, 3.15.

A statement of the condition of the grounds and structures, pertaining to the lake and conduit, will be found in the report of Mr. Stanwood, Superintendent of the Western Division. The keeper's house at the lake is in a bad state, and either it should receive thorough repair, or a new one should be built.

RESERVOIRS.

The monthly and yearly average heights above tide marsh level of the water, in the several reservoirs, are given in the accompanying tables on pp. 44–46.

It will be seen that the average height for the year has been the same in the Chestnut Hill, as in the Brookline Reservoir, and greater by $\frac{61}{100}$ of a foot, than the heights in the latter during 1871.

The Beacon Hill and South Boston Reservoirs are not now kept in open communication with the distributing system, and therefore the heights of water in them no longer indicate the pressure upon the street mains in their vicinities. The only useful purpose these reservoirs serve at present is to store a quantity of water for use in case of fire, or of accident to the mains which supply the districts about them.

The Beacon Hill Reservoir has too high an elevation to be of use in connection with the low-service distribution, and there appears to be no good reason why it should not be abandoned, provided the proposed one upon Parker Hill be built, as the latter will command the Beacon Hill district, and insure an adequate supply for fires.

The South Boston Reservoir is also located too high to be of much use in connection with the low-service of its district, but as it stands upon a common or park, and its maintenance is inexpensive, and as it will serve to hold in store a considerable quantity of water, for use in emergencies, — such as a break in the supply main leading to South Boston, — it probably will be thought best not to remove it.

The East Boston Reservoir has been thrown out of service during the latter half of the year, and that section of the city, supplied under the much greater head of the Charlestown works.

DISTRIBUTING SYSTEM.

The distributing pipes have been largely extended during the past year, more especially in Dorchester and Roxbury. The total amount of cast-iron pipes laid in 1872 is 17.8 miles.

The work of connecting Telegraph Hill, in South Boston, with the 12-inch high-service main in Washington street, Dorchester, was finished early in the year. The connection consists of a line of 12-inch pipes, laid through Bowdoin and Hancock streets, and of the new 20-inch low-service main, leading through Dorchester avenue and Dorchester street to Telegraph Hill.

The use of the 20-inch main for this purpose requires the supply to the South Boston low-service to be kept up through the single line of 20-inch pipe in Dover street. These pipes were laid when the Cochituate works were built, and are not protected by the tar coating now used.

Beyond question they are badly tuberculated, and are probably reduced in capacity of delivery, so as to be not much more than equivalent to 16-inch coated pipes.

The population of South Boston is not far from 40,000, and that it may be properly supplied with water, and as a safeguard in case of accident to or repairs upon the Dover-street pipes, a new main should be laid, or the Dorchester-avenue main should be returned to its original purpose, and a new main, of smaller diameter, provided for the high-service.

Pressures recently observed during the morning hours, at the hydrant near the corner of E and Seventh streets, show a loss of head, of about 28 feet, between that point and the Brookline Reservoir, and a large portion of this loss must be due to the friction in the Dover-street main.

In the report of this department for last year, Mr. Crafts recommended that a new high-service main be laid from the

pumping works to Beacon Hill, and the old 30-inch main, now supplying the Beacon Hill high-service, be used to aid in the supply of the low-service of the city proper. I fully endorse his recommendation, and would urge that it be acted upon at an early day.

To ascertain the losses of head at the end of the large supply mains, and in the business portion of the city, Mr. Jones, Superintendent of the Eastern Division, has taken gauge readings from the 40-inch main near its junction with the 36-inch main (reduced to 30 inches) on the Common, and also at the hydrant corner of Broad and Milk streets.

From these it appears that during the morning hours — or from 8 to 11 o'clock — the loss of head on the Common is from 14 to 17 feet; and that at the corner of Broad and Milk streets, during the same hours, is from 30 to 37 feet. It will be noticed that the loss between the two points at which the readings were taken (the observations were simultaneous) is nearly 20 feet, or greater than that between Brookline Reservoir and the Common. This indicates the need of greater capacity in the branch-mains feeding the easterly portion of the city.

All the territory lying to the north and east of Cambridge, Court, Tremont, and Essex streets is chiefly supplied from the single 30-inch main, in Boylston street; now the application of the 30-inch high-service main to the low-service distribution, as recommended, will give a new and very important connection between the Common and that territory, and materially improve the pressure where improvement is much needed.

If it should not be deemed advisable to now incur the expense of laying the new high-service main the entire distance between the pumping station and Beacon Hill, that portion of it between the Common, near Boylston street, and the hill, can be laid this season, and thus release enough of the 30-inch main to give the desired connection between the Common and Haymarket square on the low-service.

The Engineers of the Fire Department, holding the opinion that hydrants of much greater capacity than those now in use, and of a kind that will allow of the concentration of a number of engines at one point, are essential for proper protection against fire, especially in districts covered with high and valuable buildings, have recommended that either the Lowry or Hill hydrant be adopted. In conformity to this recommendation, your Board has decided to substitute the Lowry for the old hydrants in the "burnt district." To furnish these with a full supply of water requires that the existing street mains should be replaced by new pipes of greater capacity.

Plans and estimates for this work have been submitted and accepted, and an appropriation has been made by the City Council to carry it out.

It is desirable that these hydrants be used at all points, where tall and expensive buildings are found, or where there are buildings filled with materials of a very combustible character, such as the large wood-working shops, piano and organ manufactories, etc.; and to make their full capacity available, it will, in many instances, be necessary to make some modifications in the distributing system of pipes that will effect a more rapid delivery of water than is now possible.

Sectional plans of Roxbury, four in number, on a scale of two hundred feet to an inch, showing the water pipes as laid, with the location of gates and hydrants, have been made for the Superintendent of the Eastern Division, and similar plans of Boston proper and of Roxbury and Dorchester, on a scale of one hundred feet to an inch, are in preparation. The plans of Boston proper, thirteen in number, are practically completed, and those of Roxbury, twenty-two in number, are nearly so.

PUMPING WORKS.

The following table shows the total and monthly work done by the engines during the past year, and the amount of coal consumed in doing it: —

Statement of Operations at the High-Service Pumping Works for the year 1872.

1872.	Total pumping time.			Daily average pumping time.		Daily average amount pumped.	Hourly average am't pumped.	Average maximum hourly draft.	Average minimum hourly draft.	Greatest hourly draft.	Least hourly draft.	Average No. of revolutions per minute.	Average amount of coal used per day.	Percentage of ashes and clinkers.	Quantity pumped per lb. of coal.
	Days.	H'rs.	Min.	H'rs.	Min.	Gallons	Gallons	Gallons	Gallons	Gallons	Gallons		Lbs.		Gallons
January	24	14	40	19	3.23	599,690	31,474	43.544	20,090	80.370	16,215	11.16	1,925	17.81	311
February	23	2	15	19	6.72	594,736	31,118	41,647	20,680	52,640	16,920	11.03	1,987	17.94	299
March	24	12	15	18	58.55	620,150	32,681	47,575	20,900	78,255	16,685	11.59	2,070	17.65	300
April	23	21	30	19	7.	593,915	31,068	41,206	18,910	51,700	16,215	11.02	1,907	18.72	311
May	24	16	45	19	7.26	619,354	32.391	43,125	19,217	52,640	16,450	11.49	1.765	20.40	351
June	23	20	30	19	5.	672,500	35,240	44,780	22,121	50,525	17,860	12.50	1,979	20.18	340
July	27	23	45	21	.40	793,428	36,615	49,012	22,189	58,515	18,800	12.98	2,183	20.05	363
August	31	. . .	. . .	24	. . .	844,552	35,190	50,889	20,210	68,620	18,800	12.48	2.115	20.84	399
September	30	. . .	. . .	24	. . .	828,367	34,515	51,908	19,137	62,510	16,920	12.24	2,384	20.50	347
October	30	22	. . .	23	56.13	818,969	34,216	52,369	18,254	66,035	15,980	12.13	2,562	20.36	320
November	29	23	30	23	59.	856,121	35,696	53,610	19,638	75,905	16,450	12.66	2,626	21.20	326
December	31	. . .	. . .	24	. . .	960,202	40,008	57,136	24,023	76,375	18,565	14.19	2,758	21.80	348
	325	13	10	21	20.24	733,499	34,184	48,069	20,447			12.12	2,188	19.79	335

The average daily amount pumped for the year has been 733,499 gallons; the daily average for 1871 was 557,634 gallons; the increase is about 31 per cent.

Owing to this increase, and to the necessity of furnishing an abundant supply of water for fires within the high-service area, the existing pumping machinery is unable to perform the duty required of it. I was therefore directed by your Board, early in the season, to report upon the best means for securing an adequate supply for all purposes; and in obedience to those orders the following report was presented.

CITY OF BOSTON.

"Office of the City Engineer, City Hall.

"Boston, March 4, 1873.

"Chas. H. Allen, Esq., *President Cochituate Water Board:* —

"Sir, — The following report relating to the best method of increasing the effective capacity of the high-service system of water supply is made by request of Mr. Haven, Chairman of the Committee on Eastern Division.

"The districts included within the limits marked out on the map for the high-service distributing system constitute more than one-third of the present area of the city.

"They are: Beacon Hill in Boston Proper, Telegraph Hill in South Boston, Parker's Hill, Fort Hill, Tommy's Rock and the Seaver Hill Territory in Roxbury, and the range of high lands which forms the greater portion of Dorchester; making in all an area of about 3,500 acres.

"A part of this area is not now supplied with water, in fact has scarcely any population, and a large portion of that which is supplied is not thickly populated; but both parts contain some of the most desirable land for residences within the city limits, and evidently are destined to be rapidly occupied.

"Future annexations will greatly increase the high-service area, both absolutely and relatively, and if all the territory extending to Mother Brook, between the Charles and Neponset rivers, shall form the future city, or one metropolitan district, then the area to be supplied from your high-service system will

be very much larger than that to be furnished with water by the low-service.

"It is therefore evident that the high-service works will in a few years form one of the most important divisions of the entire system of water supply, and it is particularly desirable that their general character and outline shall be determined upon at as early a day as the necessary data for this purpose can be obtained, that whatever extensions are made in the existing system may, if possible, be so made that they will form parts of, or be available for, the system of the future.

"Although the data are not now at command from which even a general outline of this system can be determined, nevertheless, there are certain features which it must or should have, that can be pointed out, and which have a bearing on the question that is the more immediate subject of this report.

"The water must be raised by machinery to an elevation that will give the requisite head upon the distributing pipes, and it is of great importance that at the point where this machinery is located there shall be a large store of water, that no interruption may occur to the supply in case the aqueduct or pipe which furnishes the water to the pumps is temporarily thrown out of use for examination, or repairs, or by accident to it.

"This condition requires the eventual abandonment of the location of the engines which now supply the high-service, for a new one either at the Chestnut Hill or the Brookline Reservoir, or at some new reservoir that may be built, specially for the purpose, at a more favorable point.

"There are other reasons than that of a want of a store of water, why the present location on Elmwood street, of the high-service machinery, is not the proper one for the machinery of a system of works that is to supply an extensive territory and a large population. There is a want of room at this point; the engine buildings would be exposed to the attacks of fires originating on neighboring premises; the loca-

tion is on the outskirts of the territory to be supplied, or is not sufficiently central for an economical system of distribution; it would require the water to be brought to it in pipes, at great cost, and a considerable loss of head; and it is so low that a pressure of over thirty pounds per square inch is created on the suction side of the pump piston, which produces a harsh action of the machinery, and to some extent impairs its efficiency.

"The new works should be of a kind that have reservoirs as centres for the distributing pipe systems.

"The area to be supplied consists of various districts, more or less isolated, for each of which there should be, as a matter of economy, a distinct system of distribution, and to secure to them an uninterrupted supply under a nearly constant head, and that the supply mains leading to the districts may be of the minimum size and cost, reservoirs should be established at convenient points.

"The existing high-service works were designed to supply a limited area only, and were not constructed upon a scale to meet the requirements of the large territory even now depending upon them, much less to provide for further extensions due to annexation.

"The pumping machinery consists of two engines, each of a capacity to pump 2,400,000 gallons in twenty-four hours, when making thirty-five revolutions per minute. These engines are supplied from a single line of pipes, sixteen inches in diameter, under a head which gives about thirty-three pounds of pressure upon the pump piston; and to enable the latter to work at the guaranteed speed, it was found necessary to connect the supply line with a large air-chamber. The pump force mains, immediately after leaving the engine building, are united by a Y branch into a single line of pipes, sixteen inches in diameter, which leads to the stand-tower on Fort Hill, and is about 2,500 feet long. On account of the connection of the engines, through the supply and force

pipes, they are found to react, one upon the other, when working together, and it is not considered safe to thus use them at a speed which will give a much greater discharge of water than will one engine alone, run at its safe maximum velocity.

"As the capacity of one engine is less than that of four steam fire-engines, it will be seen that the power to supply water in times of fire is very inadequate. The laying of independent supply and force mains would nearly double the available capacity of the engines for emergencies, and would provide a safeguard against stopping the supply in case of a burst.

"Under the existing arrangement, a burst in either the supply or force line would deprive the high-service district of water until repairs could be made, and should such an accident occur during a fire, the consequences would be serious.

"The steam parts of the engines having sufficient power to drive larger pumps than are now in use, it has been suggested that these pumps may be replaced by others of greater capacity. Such a change would be somewhat of an experiment, and unless much more valve area, or a better passageway for the water than the pumps now have, can in some way be provided, I doubt whether it would effect much gain. But even if it can be successfully made, sufficient pumping capacity would not be secured, under adverse circumstances, — such as one engine being under repair, or dismantled for cleaning, — to meet the demand for water in case of a large fire within the high-service limits.

"The pumps now in use are fourteen inches in diameter, and have a stroke of three feet, and a capacity of forty-eight gallons per revolution of the engine. The diameter that has been proposed for the new pumps, to replace the old ones, is sixteen inches, which gives a capacity of sixty-two gallons per revolution, or 130,000 gallons per hour, when the engine is

running at its guaranteed speed of thirty-five revolutions per minute.

"The average maximum hourly consumption of each day, during the coming season, will not fall short of half of this amount, or say 65,000 gallons, and will much exceed it in the following years. If, in addition to this consumption, there be required a supply for six steam fire-engines (which number the Chief Engineer of the Fire Department says should be provided for), each throwing 450 gallons per minute (the average amount), the delivery must be at the rate of 227,000 gallons per hour.

"Both engines, running together, would meet such a demand, but perfect safety is not secured when it is necessary that all the machinery shall be put in operation to meet an emergency that is likely to arise without previous warning. There should always be a reserve engine, to admit of repairs and cleaning at any time. Setting aside the domestic consumption, one engine alone, even if provided with a sixteen-inch pump, could not supply more than five fire-engines; it is clear, therefore, that, to secure proper safety, some special provision must be made to keep up the supply in times of large fires.

"This provision may consist either in the erection of a third engine, or in the building of a reservoir and connecting it with the stand-pipe.

"If the engine be erected, it should have a capacity to pump about five million gallons per day, that when in use it alone may furnish all the water required both for extinguishing fires and for domestic supply. Owing to the comparatively small draft at night, such an engine would be larger than can now be conveniently used for keeping up the daily supply; but, for the present, it can be kept in readiness for service in emergencies, and, as the consumption increases, can be gradually brought into more constant use.

"There are now two boilers in service, each rated at one hun-

dred horse-power, or of sufficient capacity to drive the new engine; nevertheless, a third boiler, of somewhat greater power, should be provided.

"The arrangement proposed is, then, two small engines (the existing ones), each of a maximum capacity of about two and a half million gallons per day, and a new engine and boiler having a capacity of about five million gallons, and supply and force mains twenty-four inches in diameter.

"The two small engines, when run together, or the large engine alone, will furnish any supply that is likely to be required from them within the next few years.

"The chief objection to this plan is, that a large expenditure will be necessary for machinery, buildings, mains, etc., which probably will be thrown out of use at the end of a few years.

"A reservoir can be built on Parker's Hill, at an elevation that will give sufficient head on the high-service pipes, or with a water-surface about two hundred feet above tide-marsh level.

"If this reservoir be connected with the stand-tower on Fort Hill, it will be put in good communication with the high-service distributing system, and will *instantly* respond to any demand for a sudden increase of supply.

"The ratio between the average and maximum quantities of water pumped in an hour, during each month, has varied in the past year from $\frac{100}{143}$ to $\frac{100}{255}$, as shown in the following table: —

"*Table showing the average and maximum quantities of water pumped in an hour, and the ratios between them, for each month of* 1872.

MONTH.	Average.	Maximum.	Ratio.
	Gallons.	Gallons.	
January	31,474	80,370	As 1 to 2.55
February	31,118	52,640	As 1 to 1.69
March	32,681	78,255	As 1 to 2.39
April	31,068	51,700	As 1 to 1.66
May	32,391	52,640	As 1 to 1.63
June	35,240	50,525	As 1 to 1.43
July	36,615	58,515	As 1 to 1.60
August	35,190	68,620	As 1 to 1.95
September	34,515	62,510	As 1 to 1.81
October	34,216	66,035	As 1 to 1.93
November	35,696	75,905	As 1 to 2.13
December	40,008	76,375	As 1 to 1.91
Averages	34,184	64,508	As 1 to 1.89

"From the above it will be seen, that an engine which has to vary its speed as the consumption of water varies, is required to be about double the capacity of one doing the same work under a uniform speed; that is to say, to furnish a given supply, an engine pumping into a stand-pipe should have twice the capacity of one pumping into a reservoir.

"Hence it follows that the building of a reservoir, besides insuring an ample supply of water for the extinguishment of fires, would, by virtually doubling the pumping capacity, be equivalent to the addition of a new engine having twice the power of each of the existing ones.

"If it be built to serve a temporary purpose only, its connection with the stand-tower may be made with a line of twenty-inch pipes, but as its proposed location is the proper one for one of the auxiliary reservoirs of the future high-service system, its pipe connections should be proportioned

for future use, and this use should be kept in view in determining upon the capacity of the reservoir, the design of the chambers, and the character of the work.

"Its office, in the works of the future, will be to regulate the supply to Beacon Hill, Roxbury Highlands, and a portion of Dorchester.

"Estimates are hereinafter given, first, for a new engine with its buildings, and supply and force mains; second, for a new reservoir, designed to serve a temporary purpose, and having a capacity of 4,500,000 gallons; third, for a new reservoir, designed to form a part of the future high-service system, and having a capacity of about 6,000,000 gallons.

"It will be noticed that the land damages are the most important items of the last two estimates, but it should be borne in mind that the value of this land is increasing from year to year, and that if not now taken for the purpose proposed, it probably will be eventually.

"In conclusion, I would recommend that a new reservoir, having a capacity of at least six millions of gallons, be built on Parker's Hill, and connected with the stand-tower by a twenty-four inch line of pipes, and would suggest that, until this work is completed, the following precautionary measures be taken: —

"First, to make such connections at the Beacon Hill and South Boston reservoirs as will permit of quickly putting them in communication with the high-service pipe mains.

"Second, to keep these reservoirs well filled with water.

"Third, to employ men familiar with the location of the gates and street mains, whose duty shall be to attend every alarm of fire in the high-service districts, and who shall be given proper instructions, in reference to opening communication with the reservoirs, and to shutting off portions of the high-service area when the exigency of the case requires.

"The following are the approximate preliminary estimates of cost: —

"FIRST ESTIMATE.

Engine and boiler; capacity five millions of gallons in twenty-four hours	$60,000
Engine buildings and foundations	22,000
Supply main, twenty-four inches diameter	6,150
Force main, " " "	30,500
Land damages	11,000
	$129,650
"Add ten per cent.	12,965
"Total	$142,615

"SECOND ESTIMATE.

Reservoir on Parker's Hill; capacity about 4,500,000 gallons	$ 53,000
Line of twenty-inch pipe to stand-tower	31,000
Land damages	75,000
	$159,000
"Add ten per cent.	15,900
"Total	$174,000

"THIRD ESTIMATE.

Reservoir on Parker's Hill; capacity about 6,000,000 gallons	$73,500
Line of twenty-four inch pipe to stand-tower	39,500
Land damages	100,000
	$213,000
"Add ten per cent.	21,300
"Total	$234,300

"Respectfully submitted,

"JOSEPH P. DAVIS,

"*City Engineer.*"

Application has been made to the Legislature for an act authorizing the construction of a reservoir upon Parker's Hill. The season will be so far advanced before the necessary appropriations can be made, and the work put under contract, that it is improbable that the reservoir can be made ready for use before another summer.

The following is a statement of the cost of pumping for the year 1872 : —

Salaries	$3,933 75
Fuel	2,588 00
Repairs	433 91
Gas	316 22
Small supplies	113 42
Total	$7,435 30

Approximate cost per million gallons raised one foot high, 34 cents.

CONSUMPTION OF WATER.

The table on pages 47 and 48 gives the average daily consumption of water for each month since 1848. The daily average for the year 1872 was 15,063,400 gallons, which is in excess of the average for 1871 by about 8 per cent. The greatest consumption was in November, for which month the daily average was 17,591,400 gallons.

The great fire of Nov. 9th began at about quarter past seven in the evening, and was not brought under control until the afternoon of the 10th. The consumption of water in the city for all purposes, from 6 A. M. of the 9th to 6 A. M. of the 11th, or for 48 hours, was 43,500,000 gallons. The average use for domestic purposes, just previous to the fire, was 12,500,000 gallons in twenty-four hours; hence, it appears that fully 18,500,000 gallons were used by the Fire

Department in the thirty-five hours from 7 P. M. Nov. 9th, to 6 A. M. Nov. 11th, much the greater portion of which was used in the first eighteen hours.

This quantity would cover the entire area burnt over (taken at 60 acres), 10½ inches deep, and would cover the area occupied by the buildings about 14 inches deep.

ADDITIONAL SUPPLY.

Since the date of the last yearly report, preliminary surveys have been made to determine the location of a conduit from Farm Pond to Chestnut Hill Reservoir, and the best position for storage basins upon the Sudbury River. A plan of works for securing and conveying to the city the additional supply to be drawn from this river has been devised, and its cost estimated, and a report, bearing date January 27, together with plans of the various structures required, was presented to the Water Board. The plan proposed has received the approval of the City Government, and an appropriation of $500,000 has been made to cover the expenditures of this year.

A force will at once be put into the field, to make the surveys for the final location of the conduit line, and portions of the work got under contract at as early a day as possible.

RAIN-FALL.

The usual tables giving the rain-fall at various points for the year 1872 will be found appended.

Respectfully submitted,

JOSEPH P. DAVIS,
City Engineer.

Average Monthly and Yearly Heights, in feet and decimals, of the several Reservoirs above "tide marsh level," 1862–72.

BROOKLINE.

Maximum high-water line, 124.60.

MONTH.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January	122.46	123.64	122.37	123.31	122.28	122.00	123.29	122.58	122.83	121.89	118.64
February	122.85	123.23	122.61	122.82	122.47	123.12	122.79	122.64	122.60	122.54	120.48
March	123.52	123.23	123.62	123.26	123.19	123.05	122.33	122.48	122.77	122.08	122.04
April	124.18	123.85	123.82	123.38	123.45	123.00	123.04	122.60	122.56	122.00	122.10
May	124.00	123.52	123.62	122.65	123.04	123.07	123.04	122.77	122.75	121.79	122.29
June	123.25	123.17	122.66	123.23	123.29	122.34	122.77	121.85	122.64	121.98	122.25
July	123.73	122.76	122.87	123.33	122.97	122.98	122.77	122.10	122.50	122.19	121.25
August	123.70	123.11	122.64	123.39	122.80	122.23	122.75	122.19	122.23	122.06	122.14
September	123.64	123.36	122.03	123.29	122.81	122.52	122.12	122.50	122.35	121.50	123.44
October	123.85	122.26	123.19	123.29	123.03	122.65	122.31	122.58	122.64	119.54	122.96
November	124.07	123.63	122.78	123.38	122.75	122.89	122.56	122.46	122.60	116.94	120.98
December	123.46	122.53	122.29	123.24	122.64	122.37	122.00	122.92	122.50	117.71	121.06
Yearly Average	123.56	123.19	122.87	123.21	122.89	122.69	122.65	122.48	122.58	121.02	121.63

BEACON HILL.

Maximum high-water line, 121.53.

MONTH.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January	117.48	118.36	117.72	119.18	119.20	119.11	120.20	118.51	118.63	119.26	116.20
February	119.46	118.18	117.54	118.91	119.65	118.59	120.11	118.72	117.78	118.95	116.38
March	119.18	118.03	116.38	120.58	120.72	119.45	120.57	118.30	118.07	119 38	116.49
April	117.91	117.27	117.21	121.28	120.70	119.86	120.57	118.82	118.34	119.59	116.72
May	117.59	116.33	116.53	120.31	119.53	118.50	118.65	119.68	118.63	119.09	116.70
June	116.39	115.40	115.31	120.56	118.53	118.34	118.45	117.13	118.03	. .	116.99
July	116.46	116.34	115.32	121.23	119.51	119.00	120.24	117.20	119.30	109.63	116.95
August	116.22	116.05	115.19	119.83	119.17	117.70	117.11	117.63	119.59	109.68	117.11
September	116.22	116.12	115.91	119.03	119.39	120.46	118.20	117.45	117.72	. .	117.65
October	. .	115.87	118.17	118.43	119.50	120.46	118.61	118.36	117.80	. .	118.20
November	117.20	116.85	118.55	120.14	119.78	120.84	119.03	118.45	118.61	. .	118.36
December	115.23	118.30	117.35	120.50	119.37	120.02	117.78	118.36	119.38	. .	118.51
Yearly Average	117.21	116.92	116.77	120.00	119.59	119.36	119.11	118.13	118 49	116.51	117.19

Average monthly and yearly heights, etc. — Continued.

SOUTH BOSTON.
Maximum high-water line, 122.86.

MONTH.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January	113.66	115.73	110.63	114.21	114.38	112.46	111.15	111.15	114.46	112.51	109.34
February	114.08	115.54	110.94	113.42	114.44	111.36	111.15	111.34	114.80	112.61	109.42
March	114.12	115.36	111.13	113.64	113.51	111.74	111.11	111.63	114.51	112.74	109.38
April	114.93	114.73	112.07	114.82	114.99	111.88	111.55	111.96	113.57	112.63	109.67
May	115.74	112.71	111.64	115.44	114.90	111.63	111.61	111.78	113.53	112.71	109.32
June	114.22	111.39	109.06	114.91	114.32	111.19	112.15	111.51	113.36	112.44	109.24
July	114.23	109.75	108.57	114.36	113.96	111.53	111.53	111.19	112.21	115.32	109.05
August	114.03	109.80	109.53	113.80	114.07	111.90	111.53	110.65	110.78	114.03	108.82
September	114.04	109.64	110.21	113.69	113.41	111.70	111.44	108.76	110.15	113.13	106.49
October	114.24	109.90	112.49	112.89	112.74	111.29	111.44	113.15	110.01	112.80	109.34
November	115.94	111.25	112.49	112.74	112.03	111.26	111.44	113.76	111.86	112.76	110.61
December	116.35	109.90	113.89	113.78	112.62	111.08	111.11	113.88	112.61	109.26	110.71
Yearly Average	114.63	112.14	111.05	113.97	113.78	111.59	111.44	111.74	112.65	112.74	109.28

EAST BOSTON.
Maximum high-water line, 107.60.

MONTH.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January	96.26	95.64	90.22	96.12	93.61	91.89	92 81	99.72	104.45	101.18	103.47
February	94.94	93.86	92.98	97.00	96.61	92.06	92.10	100.56	104.20	104.33	102.56
March	95.75	94.29	93.50	94.83	94.22	91.69	91.14	100.60	100.89	106.12	100.41
April	96.71	95.65	96.16	96.52	96.47	90.91			104.93	107.14	100.10
May	96.99	93.07	97.68	96.04	95.85	89.63		Shut off for repairs.	105.91	106.50	101.54
June	95.99	91.10	94.22	93.91	93.71	91.82			106.00	106.43	106.83
July	96.13	90.43	92.34	96.82	95.35	94.60		100.60	103.87	106.47	. .
August	93.96	91.23	92.84	95.78	93.85	94.16		95.08	104.25	105.22	. .
September	95.57	91.96	95.00	94.52	Shut off for repairs.	99.40	Shut off for repairs.	94.87	102.77	104.91	. .
October	91.80	95.02	97.55	93.38		96.85		96.97	105.20	104.81	. .
November	93.57	93.36	98.14	92.23		93.47		101.12	104.75	104.56	. .
December	95.77	89.79	97.27	94.34	92.29	92.57		102.06	105.18	104.58	. .
Yearly Average	95.29	92.95	94.83	95.12	94.66	93.25	92.02	99.06	104.37	105.18	. .

Average monthly and yearly heights, etc. — Continued.

CHESTNUT HILL.
Maximum high-water line, 125.00.

MONTH.	1870.	1871.	1872.
January	.....	102.00	116.90
February	.....	102.81	120.46
March	.....	105.19	122.29
April	.....	110.48	122.52
May	.....	116.21	122.54
June	.....	121.46	122.35
July	.....	122.40	121.77
August	.....	122.02	122.15
September	.....	121.44	122.77
October	.....	119.67	122.08
November	100.80	117.08	122.42
December	101.29	115.35	121.40
Yearly Average	101.04	114.67	121.64

Consumption of Water. Daily Average Number of Wine Gallons drawn from the Brookline Reservoir.

MONTH.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	1859.	1860.
January	1,700,000	5,181,700	7,233,700	8,280,900	8,050,500	10,695,200	9,702,700	12,669,000	15,089,000	12,160,000	14,512,000	17,862,000
February	. . . .	5,214,000	7,221,100	8,790,300	8,643,600	10,654,200	10,349,800	12,791,000	14,175,000	14,399,000	14,769,000	18,901,000
March	1,550,000	4,841,200	6,137,900	8,521,100	8,202,200	9,582,100	10,125,600	12,504,000	13,941,000	14,154,000	14,480,000	15,409,000
April	. . . .	4,961,000	5,365,200	8,048,700	7,903,600	8,733,500	8,540,000	10,800,000	12,454,000	13,465,000	13,760,000	14,621,000
May	3,600,000	5,346,100	6,238,400	8,350,000	8,123,400	9,685,300	9,103,800	10,378,000	12,414,000	11,423,000	11,302,000	14,790,000
June	4,300,000	6,906,500	7,925,000	8,033,100	8,945,900	11,745,200	9,984,400	11,223,000	12,504,000	10,867,000	11,639,000	17,838,000
July	4,800,000	8,514,200	7,180,200	9,608,000	8,809,200	10,613,800	11,056,600	13,167,000	13,551,000	13,621,000	13,219,000	17,239,000
August	4,100,000	8,004,600	7,235,000	9,709,300	8,461,900	10,028,100	11,120,800	12,664,000	13,077,000	13,141,000	12,704,000	19,297,000
September . . .	4,800,000	6,585,500	7,230,600	7,920,000	8,640,700	9,712,400	11,710,800	11,522,000	12,030,000	12,745,000	12,389,000	17,957,000
October	4,550,000	4,504,300	6,716,600	6,930,000	8,871,100	8,769,800	10,771,200	11,891,000	10,864,000	12,969,000	12,026,000	16,938,000
November . . .	3,800,000	4,960,500	6,473,500	6,637,900	8,624,700	8,030,200	10,383,200	11,691,000	11,372,000	12,143,000	12,715,000	16,862,000
December	3,600,000	5,037,000	7,663,400	7,195,800	9,228,400	10,597,600	11,307,200	13,284,000	11,241,000	13,075,000	14,586,000	19,151,000
Average for year	3,680,000	5,837,900	6,883,800	8,125,800	8,542,300	9,902,000	10,346,300	12,048,600	12,726,000	12,847,000	13,175,000	17,238,000

Consumption of Water. — Continued.

Month.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January	21,106,769	17,000,000	16,112,000	18,954,000	13,412,000	14,850,000	13,511,000	15,992,000	15,426,000	12,525,000	14,110,000	12,203,900
February	20,804,131	17,000,000	17,328,000	18,846,000	13,318,000	13,385,000	13,831,000	16,927,000	14,731,000	14,052,000	15,070,000	15,172,000
March	19,453,344	17,300,000	16,681,000	16,841,000	12,027,000	12,284,000	13,100,000	13,722,000	14,789,000	14,646,000	10,162,000	15,788,500
April	17,151,593	15,300,000	15,125,000	16,506,000	11,975,000	11,251,000	12,770,000	12,636,000	14,650,000	14,703,000	11,814,000	12,281,000
May	16,687,832	14,300,000	15,407,000	16,094,000	13,660,000	11,076,000	12,301,000	13,846,000	13,902,000	13,759,000	12,222,000	13,830,600
June	17,231,984	16,600,000	16,138,000	17,730,000	14,391,000	11,878,000	13,625,000	14,351,000	14,252,000	14,824,000	15,695,000	14,617,600
July	18,897,809	16,400,000	15,954,000	18,112,000	13,207,000	12,668,000	14,250,000	14,676,000	18,378,000	16,392,000	15,748,000	16,377,100
August	18,272,365	17,000,000	16,980,000	16,188,000	13,426,000	12,441,000	14,546,000	14,479,000	17,632,000	17,107,000	16,019,000	15,017,900
September	18,098,259	17,000,000	17,035,000	16,798,000	12,624,000	11,842,000	13,186,000	16,072,000	15,741,000	16,785,000	16,512,000	15,072,600
October	17,987,128	17,300,000	15,779,000	15,479,000	11,273,000	12,396,000	13,518,000	14,954,000	14,096,000	16,528,000	13,856,000	15,544,800
November	16,604,076	17,100,000	16,028,000	14,079,000	11,750,000	11,262,000	12,707,000	13,975,000	13,608,000	14,677,000	13,574,000	17,591,400
December	15,976,362	17,000,000	16,295,000	14,547,000	10,877,000	11,412,000	15,434,000	15,600,000	13,640,000	14,094,000	12,564,000	17,263,700
Average for the year	18,189,304	16,600,000	16,238,500	16,681,000	12,662,000	12,229,000	13,565,000	14,769,167	15,070,400	15,007,700	13,945,500	15,063,400

Statement showing amount of Rainfall on Water-shed of Lake Cochituate, amount of Water consumed and wasted, available amount received into Lake, available percentage of Rainfall, etc., from 1852 to 1872, inclusive. Water-shed of Lake = 12,077 acres.

YEAR.	Rainfall.	Amount of Rainfall on Water-shed of Lake Cochituate.	Amount of Water drawn from Lake.	Amount of Water wasted from Lake.	Total amount consumed and wasted.	Rise of Lake during the year.	Fall of Lake during the year.	Total available amount of Rainfall received into Lake.	Available daily average am't of Rainfall rec'd into Lake.	Available percentage of Rainfall rec'd into Lake.
	Inches.	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*	*Gallons.*	
1852*	47.93	15,759,207,000	2,974,042,800	4,020,566,885	6,994,609,685	. . . . .	261,360,000	6,733,249,685	18,396.857	43 per cent.
1853	55.73	18,366,561,000	3,117,939,500	3,166,417,500	6,284,357,000	239,580,000	. . . . .	6,523,937,000	17,873,800	35 per cent.
1854	43.15	14,187,562,000	3,614,230,000	4,187,733,020	7,801,963,020	. . . . .	217,800,000	7,584,163,020	20,778,529	53 per cent.
1855	34.96	11,494,719,000	3,776,399,500	No acc't kept.	. . . . .	. . . . .	326,700,000	. . . . .	. . . .	. . . . .
1856	40.80	13,414,892,000	4,409,787,600	No acc't kept.	. . . . .	598,950,000	. . . . .	. . . . .	. . .	. . . .
1857	63.10	20,747,052,000	4,644,990,000	10,625,900,000	15,270,890,000	32,670,000	. . . . .	15,303,560,000	41,927,562	74 per cent.
1858	48.66	15,999,232,000	4,689,155,000	1,934,500,000	6,623,655,000	. . . . .	141,570,000	6,482,085,000	17,759,013	40 per cent.
1859†	49.02	16,117,602,000	4,808,875,000	7,569,000,000	12,377,875,000	283,140,000	. . . . .	12,661,015,000	34,687,712	78 per cent.
1860	55.44	18,228,471,000	6,309,108,000	None.	6,309,108,000	174,240,000	. . . . .	6,483,348,000	17,714,065	35 per cent.
1861	45.44	15,269,303,000	6,639,095,900	3,377,558,966	10,016,654,866	. . . . .	1,459,260,000	8,557,394,866	23.444,917	56 per cent.
1862	49.69	16,337,890,000	6.059,000,000	33,200,000	6,092,200,000	1,306,800,000	. . . . .	7,399,000,000	20,271,233	45 per cent.
1863	69.30	22,785,586,000	5,927,052.500	2,165,696,470	8.092,748,970	762,300,000	. . . . .	8,855,048,970	24,260,408	39 per cent.
1864	42.60	14,006,726,000	6,105,306,700	1,368,746,000	7,474,052,700	. . . . .	1,848,577,000	5,625,475,700	15,370,152	40 per cent.
1865	49.46	16,262,266,000	4,621,630,000	1,688.120,674	6,309,750,674	743,242,500	. . . . .	7,052,993,174	19,323,270	43 per cent.
1866	62.32	20,490,455,000	4,463,585,000	None.	4,463,585,000	743,242,500	. . . . .	5,206,827,500	14,265,280	25 per cent.
1867	56.25	18,494,795,000	4,951,225,000	2,482,041,000	7,433,266,000	. . . . .	698,811,000	6,734,455,000	18,450.600	36 per cent.
1868	49.71	16,459,544,000	5,405,515,000	2,507,684,000	7,913,199,000	346,371,000	. . . . .	8,259,570,000	22,567,160	50 per cent.
1869	64.34	21,099,808,000	5,500,696,000	1,635,570,000	7,139,321,000	480,882,000	. . . . .	7,620,203,000	20,877,300	36 per cent.

1870	55.89	18,328,694,000	5,477,810,000	4,818,971,000	10,296,781,000	. . . . .	1,736,085,000	8,560,696,000	23,453,900	47 per cent.
1871	45.39	14,885,300,000	5,223,500,000	None.	5,223,500,000	. . . . .	250,933,000	4,972,567,000	13,623,470	33 per cent.
1872	48.47	15,895,364,000	‡5,775,151,200	None.	5,775,151,200	‡1,543,995,500	. . . . .	5,642,480,300	15,416,610	35 per cent.
Average .	51.32	Average daily waste for 19 years		7,437,900	Average daily capacity of Lake as a source of supply for 19 years,				21,089,850	44 per cent.
		" " " for 6 years, '52–59 .		14,378,900						
		" " " last 13 years, '60–72,		4,231,300						

* Observations of Rainfall at Lake Cochituate commenced 1852, and these observations are assumed as correct for the whole district. † Lake raised two feet.

‡ Amount received from Sudbury River in 1872, 1,676,666,400 gallons.

Table of the average monthly and yearly heights of water in the Lake above the bottom of the Aqueduct.

MONTH.	1852.	1853.	1854.	1855.	1856.	1857.	1858.	1859.*	1860.	1861.	1862.	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.
January .	10.63	9.51	10.54	10.16	8.06	9.53	10.75	10.80	10.83	11.93	6.09	11.33	13.88	7.41	8.37	12.14	10.29	12.27	13.25	5.29	4.23
February	10.20	10.78	10.95	10.65	7.59	10.28	10.05	12.17	11.36	12.77	6.57	12.85	13.71	8.24	8.73	13.14	9.75	12.96	13.19	5.40	2.52
March . .	10.49	10.44	10.93	10.68	6.96	10.67	9.35	12.45	12.67	13.21	8.65	13.95	14.33	12.28	10.58	13.57	10.96	13.21	12.81	7.96	1.19
April . .	11.23	10.68	10.66	11.57	10.24	12.30	9.36	12.06	12.72	14.14	12.40	14.59	14.32	14.00	11.96	13.50	13.29	13.40	13.33	9.31	4.19
May . . .	10.94	10.98	10.87	11.35	12.05	12.05	10.67	12.06	11.52	13.88	14.45	14.01	14.26	14.00	12.01	13.44	13.67	13.65	13.12	10.37	5.10
June . . .	10.28	10.62	10.33	10.69	11.78	12.14	11.72	11.96	10.83	12.99	14.43	13.29	13.51	13.41	12.72	13.20	13.37	13.23	13.02	9.27	5.79
July . . .	9.44	9.45	9.00	9.86	10.67	11.41	11.74	10.22	10.42	11.50	14.05	12.82	11.33	12.28	11.84	12.12	12.46	12.62	12.12	7.83	6.33
August .	8.40	8.64	6.67	9.01	11.59	11.70	11.30	10.24	9.42	10.27	12.97	13.73	9.65	11.18	11.79	12.17	11.70	11.04	10.37	6.27	7.04
September	5.68	7.78	6.64	7.52	10.82	11.72	10.40	9.84	9.42	8.71	11.33	13.43	7.91	10.09	11.59	12.00	11.61	9.73	8.67	5.00	10.02
October .	6.55	7.34	5.90	6.42	10.10	11.10	8.72	10.15	10.35	7.79	10.30	12.94	6.46	9.02	11.72	11.10	11.83	10.58	8.10	3.81	11.46
November	7.74	9.58	6.09	6.28	10.80	11.16	9.01	9.98	10.44	7.22	10.24	13.26	5.48	8.74	11.41	11.03	11.75	11.21	7.10	3.60	12.67
December	8.49	10.57	8.38	7.29	10.97	11.02	9.85	10.54	11.17	6.88	11.70	14.06	5.41	8.48	11.68	10.51	12.33	11.77	6.40	3.83	12.40
Yearly av.	9.17	9.70	9.00	9.29	10.14	11.26	10.24	11.04	10.93	10.94	11.10	13.52	10.84	10.76	11.20	12.33	11.92	12.15	10.96	6.50	6.91

* High-water mark raised two feet.

CONDUIT AT THE LAKE.

The following table shows the varying depths of the water in the conduit at the gate-house, the number of days in each month that the water was running at those depths, and the average depth for each month.

Depths Ft. In.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Days.
0-11	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2	. . .	. . .	2
0-11¾	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	. . .	1
1-0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	. . .	1
1-6	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	. . .	1
1-7	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
2-0	. . .	. . .	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	1
2-1¾	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	. . .	1
3-8	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
4-0	. . .	. . .	. . .	3	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3
4-1	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
4-2	. . .	. . .	. . .	6	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	6
4-3	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
4-4	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
4-6	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
4-10	26	. . .	1	1	4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	32
4-10½	. . .	. . .	. . .	. . .	2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2
4-11	. . .	. . .	. . .	1	3	2	. . .	. . .	. . .	. . .	. . .	. . .	6
4-11½	. . .	. . .	. . .	. . .	4	2	. . .	. . .	. . .	. . .	. . .	. . .	6
5-0	. . .	. . .	. . .	2	9	11	. . .	. . .	. . .	. . .	. . .	. . .	22
5-0½	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
5-1	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
5-1½	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
5-2	. . .	. . .	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
5-2½	. . .	. . .	. . .	2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2
5-3	. . .	. . .	. . .	7	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	8
5-3½	. . .	. . .	. . .	. . .	5	. . .	. . .	. . .	. . .	. . .	. . .	. . .	5
5-4	. . .	. . .	. . .	. . .	4	9	14	. . .	. . .	. . .	. . .	. . .	27
5-6	. . .	1	15	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	17
5-8	. . .	. . .	. . .	. . .	. . .	2	. . .	2	30	19	. . .	. . .	47

Conduit at the Lake. — Continued.

Depths Ft. In.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Days.
5–10	. . .	. . .	. . .	. . .	. . .	2	17	29	. . .	7	19	. . .	74
6–0	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	3	1	. . .	12
6–1¼	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	1
6–2	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	1	3
6–3	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	9	22	31
6–4	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	. . .	1
6–8	. . .	2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2
6–10	. . .	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1
7–0	1	24	13	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	38
8–0	2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	2
8–4	1	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1

Average Monthly Depths.

Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average for the year.
5–3¼	6–9¾	6–0¼	4–8	5–0½	5–1	5–7¼	5–9¾	5–8	4–10¾	5–11¾	6–2¼	5–7¾

Annual Amount of Rainfall, in Inches, at Lake Cochituate, Boston and vicinity, 1849 to 1872 inclusive.

YEAR.	PLACES AND OBSERVERS.						
	Lake Cochituate, by Supt. of Western Division, B. W. W.	Boston, by J. P. Hall, to 1865, by W. H. Bradley since.	Cambridge, by the Director of the Observatory.	Waltham, by Agent Boston Manufacturing Company.	Lowell, by Merrimac Manufacturing Company.	Lowell, by Locks and Canals Co., J. B. Francis.	Providence, by A. Caswell.
1849	. .	40.30	40.97	40.74	51.09	. .	34.69
1850	. .	53.98	54.07	62.13	45.68	. .	51.48
1851	. .	44.31	41.97	41.00	41.00	. .	43.30
1852	*47.93	47.94	40.51	42.24	42.78	. .	38.58
1853	*55.73	48.86	53.83	45.04	43.92	. .	53.27
1854	43.15	45.71	45.17	41.29	42.08	. .	46.25
1855	34.96	44.19	47.59	40.63	44.89	48.41	39.05
1856	40.80	52.16	53.79	42.33	42.49	45.97	40.97
1857	63.10	56.87	57.92	44.04	49.38	52.02	44.74
1858	48.66	52.67	45.46	37.40	37.73	35.80	44.51
1859	49.02	56.70	. .	48.49	47.51	48.41	45.29
1860	55.44	51.46	46.95	45.97	46.91	46.67	38.24
1861	45.44	50.07	50.14	36.51	43.32	42.95	44.25
1862	49.69	61.06	57.21	46.42	44.26	44.61	50.09
1863	69.30	67.72	56.42	53.66	52.37	57.81	54.17
1864	42.60	49.30	39.46	36.56	38.11	40.64	36.83
1865	49.46	47.83	43.59	35.84	37.38	38.82	44.69
1866	62.32	50.70	. .	43.46	38.18	41.36	46.04
1867	56.25	55.64	41.71	41.40	45.54	45.87	47.04
1868	49.71	64.11	39.89	44.65	47.96	49.58	53.52
1869	64.34	66.28	47.98	47.30	47.30	48.96	47.70
1870	55.89	59.73	41.53	39 40	46.30	48.71	49.02
1871	45.89	48.33	40.56	36.82	44 45	44.17	47.91
1872	48.47	58.04	52.73	45.80	44 32	48.67	48.71

* By J. Vannevar.

Table showing the Rainfall in Boston for the year 1872, and the days on which it occurred, from observations by Wm. H. Bradley, Esq., Superintendent of Sewers.

Days.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.22	...	...	1.32	...	.02	...	...	...	...	.60	...
2	...	...	...	...	.08	...	...	...	.02	.05	...	.17
3	...	...	.28	...	.56	...	...	.22	...	.20	.10	.06
4	.58	1.46	...	...	.12	...	.72	...	...	.16	.02	...
5	.14	...	...	...	.28	2.54	...	...	...	...	...	.28
6	...	...	...	...	.03	.92	...	...	...	...	...	...
7	...	.14	...	...	...	...	...	...	...	...	2.53	...
8	...	...	...	.60	...	.13	...	...	...	1.85	...	...
9	...	...	...	.34	...	...	.28	...	...	...	...	.08
10	...	...	.40	.24	...	.05	.24	...	...	...	...	...
11	...	...	.86	...	.04	...	.06	...	...	.04	...	...
12	...	...	...	...	...	.16	...	...	...	...	...	...
13	...	...	.32	.22	...	...	.07	...	.20	.47	.56	.12
14	...	1.06	...	...	...	...	...	.76	.22	.84	.09	...
15	...	...	.40	...	...	.54	.03	.60	.12	...	.06	...
16	...	...	...	.44	...	...	.42	1.36	3.63	...	...	...
17	.16	...	...	...	...	...	.02	1.38	...	...	...	.18
18	...	...	...	...	...	...	...	.13	.76	.02	...	...
19	...	...	...	...	.80	...	.02	...	.80	.12	...	.43
20	1.01	...	...	...	.02	...	...	...	...	...	...	.84
21	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	.08	...	...	.88	2.08	...	...	...	.12
23	...	...	...	...	.31	...	.42	...	...	...	.42	.11
24	...	...	1.14	...	.03	...	.02	...	...	...	...	...
25	...	...	...	...	.17	.04	...	...	...	...	...	...
26	...	.02	...	...	...	.38	.94	...	.10	.91	...	1.73
27	...	...	.34	...	...	...	...	.10	.96	.17	.08	.44
28	...	...	...	...	.83	.03	...	...	.56	.15	...	...
29	.32	...	...	...	...	...	.32	...	...	...	.18	...
30	...	...	...	...	.10	...	...	1.93	...	...	...	...
31	...	...	.24	...	.58	...	.04	1.92	...	...	...	.44
Monthly Totals.	2.43	2.68	3.98	3.24	3.95	4.81	4.48	10.48	7.37	4.98	4.64	5.00

Total for the year . . . . . 58.04 inches.

WATER REGISTRAR'S REPORT.

WATER REGISTRAR'S OFFICE, CITY HALL,
BOSTON, May 1, 1873.

CHARLES H. ALLEN, ESQ.,
President of the Cochituate Water Board: —

SIR, — In accordance with the requirements of the ordinance providing for the care and management of the Boston Water Works, I have the honor to submit the following report for the year 1872: —

The total number of water-takers now entered for the year 1873 is 40,688, being an increase since January 1, 1872, of 1,972.

The total number of cases where the water has been turned off for non-payment of rates during the year is 933. Of this number 751 have been turned on, leaving a balance of 182 still remaining off.

The total amount of water-rates received from April 30, 1872, to May 1, 1873, is		$903,812 67
Less amount paid to the City of Charlestown, as per contract		$52,338 36
		$851,474 31
Of this amount there was received for water used in previous years the sum of .	$50,426 81	
Leaving the receipts for water furnished during the financial year 1872 and 1873, the sum of	$801,047 50	
Amount carried forward,		$851,474 31

Amount brought forward,	$851,474 31
In addition to the above there has been received for turning on water in cases where it had been turned off for non-payment of rates, the sum of . . .	1,570 00
	$853,044 31

The increased amount of income for the financial year ending Apil 30, 1873, over the previous year is	$67,525 58
The total amount of assessments now made for the present year, is	$650,000 00
The estimated amount of income from the sales of water during the year 1873 is .	$875,000 00
The expenditures of my office during the year 1872 are	$22,362 35

The items of this expenditure are as follows: —

Paid for Salaries	$21,498 85
" " Printing	$551 65
" " Stationery	$186 97
" " Horse and Buggy	$123 00
" " Postage Stamps and Advertising .	$1 88
	$22,362 35

METRES.

The total number of metres now applied to the premises of water-takers is 955. Of this number 644 are $\frac{5}{8}$-inch, 264 1-inch, 40, 2-inch, 5, 3-inch, 2, 4-inch size; they are attached to a variety of establishments, embracing hotels, railroads, manufactories, stables, confectionery, oyster saloons, and buildings occupied by several tenants.

The following table exhibits the yearly revenue from the sale of Cochituate water since its introduction into the city October 25th, 1848: —

Received by Water Commissioners, as per Auditor's Report, in 1848					$972 81
From January 1,	1849,	to January 1,	1850,	.	71,657 79
" "	1850,	"	1851,	.	99,025 45
" "	1851,	"	1852,	.	161,052 85
" "	1852,	"	1853,	.	179,567 39
" "	1853,	"	1854,	.	196,352 32
" "	1854,	"	1855,	.	217,007 51
" "	1855,	"	1856,	.	266,302 77
" "	1856,	"	1857,	.	282,651 84
" "	1857,	"	1858,	.	289,328 83
" "	1858,	"	1859,	.	302,409 73
" "	1859,	"	1860,	.	314,808 97
" "	1860,	"	1861,	.	334,544 86
" "	1861,	"	1862,	.	365,323 96
" "	1862,	"	1863,	.	373,922 33
" "	1863,	"	1864,	.	394,506 25
" "	1864,	"	1865,	.	430,710 76
" "	1865,	"	1866,	.	450,341 48
" "	1866,	"	1867,	.	486,538 25
" "	1867,	"	1868,	.	522,130 93
" "	1868,	"	1869,	.	553,744 88
Amount carried forward,					$6,292,901 96

Amount brought forward,					$6,292,901 96
From January 1,	1869,	to January 1,	1870,	.	597,328 55
" "	1870,	"	1871,	.	708,783 68
" "	1871,	"	1872,	.	774,445 70
" "	1872,	"	1873,	.	806,102 51
" "	1873,	to May 1,	1873,	.	625,822 82
					$9,805,385 22

Statement showing the number of houses, stores, steam engines, etc., in the City of Boston, supplied with Cochituate water to the 1st of January, 1873, with the amount of water-rates paid for 1872 : —

25,511	Dwelling-houses	$408,651 02
10	Boarding-houses	527 00
703	Model-houses	19,307 85
9	Lodging-houses	376 00
14	Hotels	995 58
5,286	Stores and Shops	55,641 79
411	Buildings	16,721 90
566	Offices	4,530 28
26	Printing-offices	435 83
24	Banks	371 05
34	Halls	468 51
1	Museum	36 50
31	Private Schools	559 17
16	Asylums	979 38
4	Hospitals	170 00
35	Greenhouses	493 50
90	Churches	1,244 51
4	Markets	816 00
134	Cellars	910 50
662	Restaurants and Saloons . .	13,490 15
	Amount carried forward,	$526,726 52

Amount brought forward,		$526,726 52
7	Club-houses	202 00
2	Bath-houses	67 50
37	Photographers	1,173 50
11	Packing-houses	477 17
1445	Stables	11,550 15
26	Factories	1,000 50
8	Bleacheries	144 00
1	Brewery	109 00
2	Beer Factories	93 97
95	Bakeries	746 34
1	Boat-house	49 00
10	Freight-houses	209 00
3	Gasometers	41 33
4	Ship-yards	58 00
2	Dry docks and engines . . .	50 00
66	Shops and engines . . .	3,035 34
32	Stores " "	1,945 40
14	Factories "	885 68
6	Printing "	387 18
3	Bakeries "	108 00
2	Ship-yards "	70 00
10	Buildings "	732 12
1	Mill "	76 36
1	Packing-house "	78 00
10	Stationary engines . . .	1,002 03
63	Hoisting and Pile-driving engines .	759 00
15	Armories	181 58
71	Hand-hose	390 00
11	Fountains	140 00
42	Tumbler-washers	625 00
56	Water-pressures	279 17
3	Laundries	75 00
Amount carried forward,		$553,467 84

	Amount brought forward,	$553,467 84
2	Commercial Colleges . . .	64 00
1	Laboratory	50 00
	Custom-house	150 00
3	Branch Post-offices . . .	39 00
1	Lockup	6 25
	Fitting Gasometers . . .	315 27
	Fitting Cistern	18 00
	Steam-dredging Machine . .	50 00
	Suffolk Street District . . .	227 40
1	Ice Company (washing ice) . .	30 00
71	Steamboats	13,308 70
	Office (City Scales) . . .	11 00
	Probate building	75 00
	House of Reception . . .	10 00
31	Fire-engines, hose and H. & L. houses	680 00
2,389	Fire-hydrants	43,002 00
96	Reservoirs	1,728 00
371	Public Schools	3,000 00
	City Stables	203 75
	Washing-carts	125 00
	Offal Station	225 00
	Steamer "Henry Morrison" . .	200 00
	Faneuil Hall	40 00
	Public Library	50 00
	" " East Boston Branch .	19 50
	Paving Department Shop and Stable	27 00
	Common Sewer Department . .	250 00
	Deer Park	10 00
	Public Urinals	110 00
	Street Sprinkling	500 00
	Public Garden	25 00
	Drinking-fountains . . .	750 00
	Building purposes . . .	4,741 87
	Metered water (9 months) . .	182,592 93
		$806,102 51

Statement showing the number and kind of Water Fixtures contained within the premises of Water-takers in the City of Boston to January 1, 1873, as compared with previous years.

1870.	1871.	1872.	
5,893	6,041	6,452	Taps. These have no connection with any drain or sewer.
53,010	58,946	64,454	Sinks.
23,961	27,856	30,632	Wash-hand basins.
8,013	9,130	10,289	Bathing-tubs.
11,319	13,077	14,863	Pan water-closets.
12,235	14,104	14,891	Hopper water-closets.
250	241	278	" " " pull.
216	258	213	" " " self-acting.
433	434	503	" " " waste.
607	619	602	" " " door.
2,447	2,470	2,755	Urinals.
9,615	10,743	11,826	Wash-tubs. These are permanently attached to the building.
879	741	714	Shower-baths.
13	1	0	Hydraulic rams.
547	468	445	Private hydrants.
723	578	641	Stop-hoppers.
73	79	96	Foot-baths.
128,234	145,786	159,654	

Respectfully submitted,

WM. F. DAVIS,

Water Registrar.

REPORT OF THE SUPERINTENDENT OF THE EASTERN DIVISION COCHITUATE WATER WORKS, 1872.

Boston, May 1st, 1873.

Chas. H. Allen, Esq.,

President of the Cochituate Water Board:—

Sir, — I hereby respectfully submit my report for the year ending with April the 30th.

The whole length of main pipes of the different sizes, laid, the past year, as will be seen by the tables below, is 94,046 feet, or nearly eighteen miles.

The number of service pipes is 2,195, measuring 63,266 feet, being 12 miles, less 106 feet.

The lines of pipes on Bradley's Hill, 40 inches, 36 inches, and 30 inches in diameter, measuring in all 2,348 feet, were successfully lowered to an average depth of 3 feet early in the year. The necessity of lowering these lines was the cutting down of the hill by the town of Brookline. The work of relaying pipes of a larger size in East Boston, for the better supply in case of fire, was completed in good season. The length will be found in the tables below.

The work of establishing gates at proper places, making suitable connection and letting on the water for a high-service supply to South Boston Heights, was completed on July 15.

The laying of pipes, establishing proper gates, and making suitable connections for the use of the Mystic water for the

high-service of Beacon Hill, in case of an accident to the pumping works or pipes leading therefrom, was completed in August.

The East Boston and South Boston reservoirs were cleaned in August and September.

A new line of 10-inch pipes, 612 feet in length, was laid over the creek and by the side of Winthrop Bridge, in November. The old line was so exposed as to freeze twice during the winter of '71 and '72. The new line is enclosed by two air-tight boxes, or as near air-tight as could conveniently be made, and although last winter was a severely cold one, we had not the slightest trouble with it.

The experiment of stone troughs attached to the drinking fountains answered the purpose well through the entire season, and I believe gave to the public a satisfaction above all others. Your Board have ordered twenty more of them; a few have been delivered and set; the remainder will be set as soon after I get them as possible. I am sorry they do not come faster, as the old ones have been taken out, and the warm season is near to us. The occasion of their delay is, I suppose, the rebuilding on the "burnt district" monopolizes the most of the granite laborers. I have, however, the promise of more very soon. I think a round trough would be an improvement over the present pattern, for a square, or any locality where teams or cattle can surround it.

I am now establishing the Lowry hydrant wherever new mains are laid or alterations made. I call your attention to what I consider a wicked waste of water at the time of a fire. Most of the reservoirs are fed by a short 4-inch pipe, that is connected directly with the main pipe in street. The reservoirs were constructed before the water works, and fed from the roofs of buildings and other sources, consequently they were made with an outlet, the hole being about eight inches. When the water is let on by the firemen, the water rises in the reservoir to the outlet, and then escapes unseen through the eight-inch

hole. You can readily imagine how much water is thus wasted, and at a time when it is most needed. I have a number of times called the attention of the Fire Department to this fact, but it has not been heeded that I know of.

I would ask your attention to what I consider a very important part of this report. Ever since my connection with the Cochituate Water Works, I have seen the necessity of having a building provided, either by purchase or lease, near our pipe-yard, where a number of our workmen can live, and be near at hand, to be called on in case of an emergency. Let me describe the condition we are in. In case of a breakage in our works at night, or of a Sunday, notice is given by the police to the watch at the yard; the watchman travels upwards of a mile to the residence of the nearest workman; he hastens to the point designated. If the break is on the main pipe, he has to travel to the north part of the city, a distance of over two miles, and notify my assistant. He, the assistant, has to send to as many different places as the number of men he wants. Thence all repair to the pipe-yard for tools, thence to the place of the accident. You can readily imagine what damage might occur during all this time, and how much time might be saved, if at the yard workmen could be had at once.

Taken Up.

1,160 feet 6-inch pipe, Sumner street, between Lewis and Border street.

336 feet 6-inch pipe, Lewis street, between Sumner and Marginal street.

1,325 feet 6-inch pipe, Marginal street, between Lewis and Cottage street.

691 feet 6-inch pipe, Clarendon street, between Boylston and Beacon street.

1,032, feet $1\frac{1}{2}$-inch, iron.

115 " 1 " lead.

63 feet $\frac{3}{4}$ inch, lead.
120 " $\frac{5}{8}$ " "
46 " $\frac{1}{2}$ " "

Lowered.

786 feet 40-inch pipe on Bradley's Hill.
786 " 36 " " " " "
786 " 30 " " " " "
686 " 12 " " White street, East Boston.
272 " 6 " " Clifford street.

Extended.

$\frac{3}{4}$-inch pipe 11 feet.
$\frac{5}{8}$ " " 365 "
$\frac{1}{2}$ " " 15 "

Statement of Location, Size, and Number of Feet of Pipe Laid in 1872.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	BOSTON PROPER.		
Haymarket Square . .	Charlestown and Merrimac	20	93
	Total, 20-inch	. . . . .	93
Exeter	Beacon and Commonwealth Avenue . . .	16	400
	Total, 16-inch	. . . . .	400
Columbus Avenue . .	Clarendon and Chandler	12	150
Gloucester	Marlboro and Commonwealth Avenue . .	"	140
Boylston	Clarendon and Dartmouth	"	150
"	Dartmouth and Exeter	"	274
Cambridge	Lynde and Hancock	"	131
Castle	Tremont and Washington	"	1,177
Tremont	Castle and Dover	"	821
Clarendon	Boylston and Commonwealth Avenue . .	"	525
"	Commonwealth Avenue and Beacon . . .	"	691
High	Hartford and Washington Square	"	461
"	Washington Sq. and Broad	"	372
Summer	Church Green and Washington	"	1,114
	Total, 12-inch	. . . . .	6,006
Kirkland	Indiana Place and Pleasant	6	533
Porter	" " "	"	618
East Canton	Albany and Harrison Avenue	"	377
Shawmut Avenue . . .	Pleasant and Warrenton	"	235
W. Clarendon	Columbus Avenue and Dartmouth	"	550
" "	Clarendon Place and Dartmouth	"	147
Commonwealth Avenue North side	Clarendon and Exeter	"	700
Commonwealth Avenue South Side	Dartmouth and Exeter	"	231
	Carried forward	. . . . .	3,391

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	Brought forward	. . . . .	3,391
Dartmouth	Newbury and R. R. Bridge	6	100
Fairfield	Marlboro and Exeter	"	150
Claremont Park	Columbus Avenue and Prov. R. R.	"	190
Marlboro	Fairfield and Dartmouth	"	1,000
Bowdoin Square . . .	Green and Bulfinch	"	130
Middlesex	Lucus and Castle	"	95
Emerald	Paul and Castle	"	30
Albion	Chapman and Castle	"	290
Village	" " "	"	170
Shawmut Avenue . . .	" " "	"	227
Chandler	Berkeley and Tremont	"	278
Central whf., So. side .	Across Atlantic Avenue	"	72
Mount Washington Av.	Federal and the Bridge	"	325
Dartmouth	Columbus Avenue and Prov. R. R.	"	103
Clarendon	Boylston and Prov. R. R.	"	487
Sawyer	Shawmut Avenue and Lenox	"	84
Yarmouth	Columbus Avenue and Prov. R. R.	"	36
Oliver	Sturgis and Purchase	"	700
Washington Square . .	Oliver and High	"	358
Hamilton	High and Batterymarch	"	312
Purchase	High and Pearl	"	1,042
Hartford	Purchase and High	"	374
Sturgis	Pearl and Broad	"	500
Newbury	Berkeley and Clarendon	"	90
Sawyer	Winifred Court and Lenox	"	427
	Total, 6-inch	. . . . .	$10,961
Ohio Place	Washington and Shawmut Avenue	4	370
Otis Place	From Brimmer	"	96
Buckingham Place . .	From Buckingham	"	192
	Carried forward	. . . . .	658

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	Brought forward	. . . . .	658
Paul	Tremont and Emerald	4	339
Carlton	Newton and Berwick Park	"	72
Lawrence	Dartmouth and Clarendon	"	123
Greenwich Park . . .	Columbus Avenue and Prov. R. R.	"	60
Providence R. R. Yard	From Clarendon	"	66
Preston & Merrill's Yard	From Mount Washington Avenue	"	161
Caznove Place	Columbus Avenue and Prov. R. R.	"	240
	Total 4-inch	. . . . .	1,719

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	SOUTH BOSTON.		
Thomas	Atlantic and Atlantic	12	1,292
Dorchester	Dorchester Avenue and Jenkins	"	1,038
	Total 12-inch		2,330
Second	N and O	6	284
Third	L. and M.	"	566
Fourth	Atlantic and G	"	477
"	G and H	"	633
"	G and Linden	"	62
Sixth	I and K	"	90
"	Dorchester Avenue and Ontario	"	230
"	H and I	"	186
Seventh	G and H	"	195
"	L and M.	"	390
Ninth	Dorchester and Lowland	"	280
F	First and Second	"	264
G	Seventh and Thomas	"	215
G	Seventh and H	"	290
G	Eighth and Ninth	"	118
M	Third and Broadway	"	370
National	Thomas and Dorchester	"	200
Old Harbor	Eighth and Old Harbor Place	"	100
Storey	Eighth and G	"	232
	Total, 6-inch		5,182
Kimball Court	From P Street	4	180
Cavanaugh Place	From E Street	"	170
Swallow	N and O	"	416
Bowen	Dorchester and F	"	164
	Carried forward		930

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	Brought forward	. . . . .	930
Ontario	Sixth and Swan	4	233
Mechanic Place	From Eighth Street	"	173
Jay	Fourth and Fifth	"	158
New Lark	Ninth and O. C. & N. R. R.	"	80
Newman	Lowland and Dorchester	"	226
Broadway	Foundry and O. C. & N. R. R.	"	576
Athens	B & B. H. & E. R. R.	"	50
	Total 4-inch	. . . . .	2,426

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	EAST BOSTON.		
Brooks	Bennington and Chelsea	16	629
	Total, 16-inch		629
Sumner	Border and Maverick Square	12	1,160
Lewis	Webster and Marginal	"	336
Marginal	Lewis and Cottage	"	1,325
Chelsea	Marion and Saratoga	"	2,830
	Total, 12-inch		5,651
Winthrop Bridge	East Boston and Winthrop	10	612
	Total, 10-inch		612
Trenton	Putnam and White	6	162
Eagle	Brooks and Meridian	"	440
"	Knox and Putnam	"	100
Saratoga	Prescott and Chelsea	"	180
Prescott	Trenton and Lexington	"	148
Chelsea	Glendon and Byron	"	482
Havre	Bennington and Marion	"	290
Putnam	Lexington and Trenton	"	132
London	Porter and Bennington	"	125
	Total, 6-inch		2,059
Haynes	Orleans and Marginal	4	176
	Total, 4-inch		176

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	BOSTON HIGHLANDS.		
Longwood Avenue . .	Bumstead Lane and Maple Avenue	12	1,738
Brookline	Longwood Avenue and Francis	"	955
Tremont	Philip and Bumstead Lane	"	429
Blue Hill Avenue . . .	Alaska and Wayne	"	916
" " "	Waverly and Woodville Square	"	58
Centre	Old Heath and Armory	"	369
Seaver	Maple and Walnut Avenue	"	389
Day	New Heath and Creighton	"	181
Shawmut Avenue . . .	Codman Avenue and Egleston Square . .	"	801
Ruggles	Belmont and Cabot	"	100
"	Warwick and Tremont	"	640
New Heath	Walden Place and Day	"	89
	Total, 12-inch	. . . . .	6,665
Conant	Bumstead Lane and Worthington	9	8
Wigglesworth	Tremont and Longwood Avenue	"	9
Worthington	" " "	"	10
Westminster	Ruggles and Hammond Park	"	33
Windsor	Westminster and Shawmut Avenue . . .	"	13
Warwick	Ruggles and Hammond Park	"	45
Townsend	Warren and Shawmut Avenue	"	35
Bowers	Laurel and Sherman	"	22
Ottawa	" " "	"	12
Circuit	Regent and Shawmut Avenue	"	32
Old Heath	New Heath and Centre	"	32
New Heath	Day and Walden Place	"	13
Woodward Avenue . .	Dudley and George	"	13
Bickford	New Heath and Bromley Park	"	12
Schuyler	Maple and Blue Hill Avenue	"	25
Maple	Schuyler and Seaver	"	24
	Carried forward	. . . . .	338

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	Brought forward	. . . . .	338
Rand	Blue Hill Avenue and Rand Place	9	10
Oriole	From Walnut Avenue	"	9
St. James	Regent and Shawmut Avenue	"	22
Vernon	Cabot and Simmons	"	10
Akron	Regent and Alpine	"	12
Regent	St. James and Fountain	"	24
Tower	Oriole and Llewellyn Avenue	"	9
	Total, 9-inch	. . . . .	434
Winslow	Eustis and Dudley	6	754
Longwood Avenue . .	Brookline Avenue and Maple Avenue . .	"	53
Conant	Bumstead Lane and Worthington	"	322
Folsom Place	From Conant	"	234
Wigglesworth	Tremont and Longwood Avenue	"	363
Worthington	" " " "	"	429
Phillips	Tremont and Smith	"	45
Westminster	Ruggles and Hammond Park	"	1,206
Marble	Westminster and Warwick	"	412
Warwick	Ruggles and Hammond Park	"	1,325
"	Ruggles and Marble	"	84
Waverly	Perrin and Blue Hill Avenue	"	142
Townsend	Warren and Shawmut Avenue	"	1,182
Ottawa	Laurel and Sherman	"	766
Fountain	Circuit and Regent	"	14
Riverside	From Tremont	"	236
Catawba	Laurel and Sherman	"	180
Regent	St. James and Circuit	"	547
Circuit	Regent and Walnut Avenue	"	650
Old Heath	New Heath and Centre	"	798
	Carried forward	. . . . .	9,742

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	Brought forward	. . . . .	9,742
New Heath	Walden Place and Day	6	382
Woodward Avenue . .	Dudley and George	"	526
Bickford	From New Heath	"	533
Schuyler	Maple and Blue Hill Avenue	"	669
Maple	Schuyler and Seaver	"	759
Albert	Old Heath and Bromley Park	"	92
Whitney	From Tremont	"	176
Cedar	Centre and Pynchon	"	370
Delle Avenue	From Parker	"	112
Rand	Blue Hill Avenue and Rand Place	"	451
Drury Place	From Parker	"	154
Clifford	Warren and Blue Hill Avenue	"	155
Oriole	From Walnut Avenue	"	320
Alpine	St. James and Akron	"	307
St. James	Regent and Shawmut Avenue	"	1,048
Vernon	Cabot and Simmons	"	360
Dennis	Dudley and Huckins Avenue	"	191
Zeigler	Warren and Washington	"	365
Akron	Regent and Alpine	"	611
Tower	Oriole and Llewellyn Avenue	"	346
Llewellyn Avenue . . .	From Walnut Avenue	"	92
Swett	Beyond Hilton	"	830
Hampshire	Ruggles and Culvert	"	47
Cabot	" " "	"	216
Farnham	Reed and Hampden	"	202
Place from Dudley . .	From Dudley	"	154
Gaston	Warren and Blue Hill Avenue	"	323
	Total, 6-inch	. . . . .	19,533

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
Roxbury Alms House	From Marcella	4	208
Orchard	From Yeoman	"	109
Ruggles	Cabot and Tremont	"	10
Bickford Avenue	From New Heath	"	430
Fremont and Dayton Av	Mall and Mall	"	352
Longwood Avenue	Binney and Brookline Avenue	"	45
Walden Place	From Highland	"	237
Linwood Square	From Linwood	"	230
Fort Avenue	Highland and Beech Glen Avenue	"	312
Highland Park	Beech Glen Avenue and Fort Avenue	"	238
Rockville Place	From Warren	"	219
Lagrange Place	From Blue Hill Avenue	"	182
Bromley Park	Bickford and Albert	"	454
Guild	Shawmut Avenue and Lambert Avenue	"	313
Pevear Court	From Dudley	"	269
Eaton Court	From Cedar	"	441
Sewell Place	From Tremont	"	231
Blanchard Place	Bartlett and Norfolk	"	127
	Total, 4-inch		4,407

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	DORCHESTER.		
Bowdoin	Washington and Church	12	2,209
Church	Bowdoin and Adam	"	275
Cottage	Boston and Pleasant	"	708
Harvard	Washington and School	"	942
	Total, 12-inch		4,134
Hamlet	Boston and Berkeley Place	9	8
Berkeley Place	Stoughton and Hamlet	"	7
Clayton	Park and Commercial	"	36
Myrtle	Bird and Quincy	"	25
Centre	Adam and Centre Avenue	"	32
Pleasant	Creek and Commercial	"	17
Commercial	Hancock Street and Dorchester Avenue	"	35
High	Commercial and Highland	"	14
Lincoln	Adams and Dorchester Avenue	"	10
Winter	Adams and Hancock	"	16
Columbia	Washington and Blue Hill Avenue	"	53
New Seaver	Columbia and Erie Avenue	"	27
Michigan Avenue	" " " "	"	36
Elmo	Blue Hill Avenue and Erie Avenue	"	24
Brook Avenue	Cottage and Stoughton	"	22
Parkman	Adams and Dorchester Avenue	"	49
Arcadia	Adams and Draper	"	39
Westville	Arcadia and Draper	"	12
Grant	From Crescent Avenue	"	12
Everett Avenue	From Stoughton	"	11
	Total, 9-inch		485

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
Howard Avenue . . .	Hartford and Howard	6	231
Green	From Bowdoin	"	219
Bellevue	" "	"	16
Hamlet	Boston and Berkeley Place	"	472
Berkeley Place	Stoughton and Hamlet	"	336
Park	Beach and Clayton	"	134
Clayton	Park and Granger	"	969
Bird	Ceylon and Myrtle	"	20
Myrtle	Quincy and Stoughton	"	530
"	Bird and Stoughton	"	1,700
Centre	Adams and Centre Avenue	"	1,180
Pleasant	Creek and Commercial	"	246
Commercial	Hancock and Dorchester Avenue	"	1,551
High	Commercial and Highland	"	417
Lincoln	Adams and Dorchester Avenue	"	400
Winter	Adams and Hancock	"	593
Columbia	Washington and Blue Hill Avenue	"	1,481
New Seaver	Columbia and Erie Avenue	"	645
Michigan Avenue . . .	" " " "	"	873
Elmo	Blue Hill Avenue and Erie Avenue	"	562
Erie Avenue	Elmo and Michigan Avenue	"	234
Brook Avenue	Cottage and Stoughton	"	811
Parkman	Adams and Dorchester Avenue	"	1,351
Arcadia	Adams and Draper	"	833
Draper	Arcadia and Robinson	"	346
Westville	Arcadia and Draper	"	228
Grant	From Crescent Avenue	"	315
Everett Avenue	From Stoughton	"	470
Fox Avenue	Adams and Percival Avenue	"	355
East	Winter and Highland	"	650
	Carried forward	. . . . .	18,168

Statement of Location, Size, etc. — Continued.

In what Street.	Between what Streets.	Diameter of Iron Pipe in Inches.	Feet of Pipe.
	Brought forward	. . . . .	18,168
East	Winter and Dorchester Avenue	6	322
Howard	Myrtle and Howard	"	511
	Total, 6-inch	. . . . .	19,001
Myrtle Place	From Myrtle	4	229
Trull	From Hancock	"	657
Oakman	Walnut and Taylor	"	146
	Total, 4-inch	. . . . .	1,032

RECAPITULATION.

Section.	1872.	Diameter in Inches.								
		24.	20.	16.	12.	10.	9.	6.	4.	Total.
Boston	Total number of feet laid	....	93	400	6,006	....	....	10,961	1,719	
	Stopcocks in same	1	1	....	11	....	....	45	11	
South Boston	Total number of feet laid	....	....	....	2,330	....	....	5,182	2,426	
	Stopcocks in same	....	....	....	1	....	....	23	13	
East Boston	Total number of feet laid	....	....	629	5,651	612	....	2,059	176	
	Stopcocks in same	....	....	1	7	2	....	13	6	
Boston Highlands	Total number of feet laid	....	....	....	6,665	....	434	19,533	4,407	
	Stopcocks in same	....	....	....	10	....	....	43	17	
Dorchester	Total number of feet laid	....	....	....	4,134	....	485	19,001	1,032	
	Stopcocks in same	....	....	....	5	....	....	32	2	
Brookline	Total number of feet laid	....	....	....	111	....	....	....	....	
	Stopcocks in same	....	....	....	6	....	....	....	....	
	Sums of Pipe	....	93	1,029	24,897	612	919	56,736	9,760	94,046
	Sums of Stopcocks	1	1	1	40	2	....	156	49	250

Statement of the Length of different Sizes of Pipes laid, and the number of Stopcocks put in, to May 1st, 1873.

	Diameter of Pipes in Inches.														Aggregate.
	48.	40.	36.	30.	24.	20.	16.	12.	10.	9.	8.	6.	4.	3.	
Feet of Pipe laid in Brookline, Boston Highlands and Boston Proper	7,283	23,166	20,070	26,770	5,773	93	7,476	73,822	. . .	. .	2,020	297,118	92,542	. .	
Number of Stopcocks in same	5	5	8	11	11	3	25	147	. . .	. .	5	660	347	. .	
Feet of Pipe laid in Boston Highlands . . .	. .	. . .	. . .	. . .	7,618	. . .	7,141	61,273	. . .	687	. . .	118,531	25,961	238	
Number of Stopcocks in same	. .	. . .	. . .	1	7	. . .	16	84	. . .	. .	1	237	104	2	
Feet of Pipe laid in South Boston	. .	. . .	. . .	. . .	. . .	13,175	. . .	23,643	. . .	. .	2,871	110,247	35,327	. .	
Number of Stopcocks in same	. .	. . .	. . .	. . .	. . .	5	. . .	35	. . .	. .	2	179	95	. .	
Feet of Pipe laid in East Boston	. .	. . .	. . .	. . .	1,463	15,972	2,152	29,013	9,923	. .	18,584	77,475	5,625	. .	
Number of Stopcocks in same	. .	. . .	. . .	. . .	. . .	8	5	38	3	. .	8	122	40	. .	
Feet of Pipe laid in Dorchester	. .	. . .	. . .	. . .	3,299	3,698	456	60,576	. . .	741	. . .	55,561	2,850	. .	
Number of Stopcocks in same	. .	. . .	. . .	. . .	3	1	1	68	. . .	. .	. . .	98	17	. .	
Feet of Pipe laid in Newton and Needham	. .	. . .	1,074	2,140	. . .	. . .	. . .	1,359	. . .	. .	. . .	360	. . .	. .	
Number of Stopcocks in same	. .	. . .	. . .	. . .	. . .	. . .	. . .	2	. . .	. .	. . .	2	. . .	. .	
Totals — Length of Pipe laid	7,283	23,166	21,144	28,910	18,153	32,938	17,225	249,686	9,923	1,428	23,475	659,292	162,305	238	1,255,166 feet, equal to 237 miles, 3,806 feet.
Number of Stopcocks put in	5	5	8	12	21	17	47	374	3		16	1,298	603	2	2,411

Statement of Service Pipe laid in 1872.

Diameter in Inches.	Boston.		South Boston.		East Boston.		Boston Highlands.		Dorchester.		Totals.	
	Number of Pipes.	Length in Feet.	Number of Pipes.	Length in Feet.	Number of Pipes.	Length in Feet.	Number of Pipes.	Length in Feet.	Number of Pipes.	Length in Feet.	Number of Pipes.	Length in Feet.
2	1	50	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	50
1¼	5	285	. . .	. . .	. . .	. . .	1	8	. . .	. . .	6	293
1	16	514	3	93	2	154	10	603	4	511	35	1,875
¾	7	188	2	359	. . .	. . .	6	149	1	21	16	717
⅝	702	17,365	49	1,543	148	9,062	693	18,088	254	7,038	1,846	53,096
½	28	882	53	1,129	33	844	94	2,265	83	2,115	291	7,235
	Aggregate										2,195	63,266
	Making the total number up to May 1st, 1873											37,165

Repairs of Pipes during the Year 1872.

WHERE.	DIAMETER OF PIPES IN INCHES.																			Totals.
	48	40	36	30	24	20	16	12	10	8	6	4	3	2	1½	1¼	1	¾	⅝	½	
Boston	1	2	2	7	1	1	0	13	.	.	36	83	2	9	73	7	52	9	921	28	1,247
South Boston	.	.	.	.	.	.	.	3	.	.	3	3	.	.	.	.	19	.	179	20	227
East Boston	.	.	.	.	.	5	.	2	2	3	.	.	.	.	.	.	.	.	64	5	81
Boston Highlands	.	.	.	2	3	.	.	5	.	.	3	7	.	.	.	.	3	1	56	4	84
Dorchester	.	.	.	.	.	.	.	.	.	.	1	.	.	.	.	.	1	.	6	.	8
Totals	1	2	2	9	4	6	.	23	2	3	43	93	2	9	73	7	75	10	1,226	57	1,647

Of the leaks that have occurred in pipes of 4 inches and upwards, joints, 114; settling of earth, 23; defective pipe, 12; defective packing, 2; concussion by falling of walls, 6; struck by bar, 1. Total, 158.

Stoppages by frost, 25; fish, 5. Total, 30.

Of 3 inches and in service pipes, joints, 10; settling of earth, 149; defective pipe, 34; defective packing, 19; defective coupling, 18; defective faucet, 4; coupling loose at main, 7; faucet loose at main, 2; faucet pulled out, 4; faucet broken at main, 6; faucet knocked out, 6; frost, 19; stiff connections, 73; struck by pick, 25; gnawed by rats, 8; pipes not in use, 14; settling of wall, 1; cut by parties unknown, 2; blasting, 1; concussion by falling of walls, 1. Total, 404.

Stoppages by frost in street, 66; frost from inside house, 169; fish, 581; rust, 218; gasket, 16; solder, 3; dirt, 2. Total, 1,055.

Statement of Number of Leaks, 1850–1872.

YEAR.	DIAMETER OF		TOTALS.
	Four Inches and upwards.	Less than four Inches.	
1850	32	72	104
1851	64	173	237
1852	82	241	323
1853	85	260	345
1854	74	280	354
1855	75	219	294
1856	75	232	307
1857	85	278	363
1858	77	324	401
1859	82	449	531
1860	134	458	592
1861	109	399	508
1862	117	373	490
1863	97	397	494
1864	95	394	489
1865	111	496	607
1866	139	536	675
1867	122	487	609
1868	82	449	531
1869	82	407	489
1870	157	769	926
1871	185	1,380	1,565
1872	188	1,459	1,647

HYDRANTS.

During the year 253 hydrants have been established, and 28 abandoned, as follows: —

In Boston proper — Lowry	17	.	.	17
" " " Wilmarth	47,	abandoned	17 .	30
South Boston, "	13,	"	. 1 .	12
East Boston — Lowry	18	.	.	18
" " Wilmarth	7	.	.	7
" " "		abandoned	10	
Boston Highlands — Lowry	59	.	.	59
" " Wilmarth	17	.	.	17
Dorchester — Lowry	63	.	.	63
" Wilmarth	6	.	.	6
Brookline — Lowry	6	.	.	6
	253		28	235
Deducting 10, abandoned in East Boston				10
				225

Total number of Hydrants established up to May 1, 1873.

	May 1st, 1872.	Put in.		Abandoned.	
Boston Proper,	1,058	64	1,122	17	1,105
South Boston,	382	13	395	1	394
East Boston,	221	25	246	10	236
Boston Highlands,	485	76	561		561
Dorchester,	251	69	320		320
Brookline,	3	6	9		9
Charlestown,	11		11		11
Chelsea,	8		8		8
Deer Island	14		14		14
	2,433	+ 253	= 2,686	— 28	= 2,658
Total number up to May 1, 1873,					2,658

86 hydrants have been taken out and replaced by new, or repaired ones, and 257 boxes have been taken out and replaced by new ones. The hydrants have had the usual attention paid them.

STOPCOCKS.

250 new stopcocks have been established this year. 127 boxes have been taken out and replaced by new ones.

All the stopcocks have had the attention of former years paid them.

Statement of Pipes and other Stock on hand, exclusive of Tools, May 1, 1873.

	DIAMETER IN INCHES.															
	48	40	36	30	24	20	18	16	12	10	9	8	6	4	3	2	1½
Pipes	.	14	10	58	32	17	3	273	1,304	41	146	24	3,591	881	48	8	.
Blow-off Branches	.	.	3	2	4	.	.	. .	16	.	. .	.	. . .	. . .	.	.	.
Y Branches	.	.	.	1	.	.	.	. .	. . .	.	. .	1	3	. . .	.	.	.
4 Way Branches	.	2	2	2	6	5	.	12	24	.	. .	6	8	1	.	.	.
3 Way Branches	.	7	2	6	13	12	.	1	121	6	149	3	63	25	3	.	.
Flange Pipe	.	2	1	1	1	.	.	2	. . .	.	. .	.	. . .	26	.	.	.
Sleeves	5	4	12	7	5	8	1	21	11	10	. .	10	42	64	12	12	.
Clamp Sleeves	.	.	9	14½	2	.	.	13½	4	.	. .	.	18	12	.	.	.
Caps	.	2	1	2	2	.	.	6	13	.	. .	7	56	48	.	.	.
Reducers	.	3	2	. .	5	4	.	4	9	.	. .	3	41	10	.	.	.
Bevel Hubs	.	.	.	. .	.	.	.	. .	. . .	6	. .	.	1	4	.	.	.
Curve Pipes	.	1	3	22	8	3	.	8	4	.	. .	1	14	11	.	.	.
Quarter Turns	.	.	2	. .	3	4	.	3	14	2	. .	.	39	13	7	4	.
Double Hubs	.	.	.	. .	.	3	.	8	. . .	.	. .	.	9	. . .	.	2	40
Offset Pipes	.	.	.	. .	.	.	.	. .	4	.	. .	.	27	19	.	.	.
Yoke Pipes	.	.	.	. .	.	.	.	. .	6	.	. .	.	9	5	.	.	.
Manhole Pipes	.	2	.	2	.	.	.	. .	. . .	.	. .	.	. . .	. . .	.	.	.
One-eighth Turns	.	.	.	. .	3	.	.	. .	26	.	. .	.	10	30	.	.	.
Pieces of Pipes	.	4	2	13	4	17	.	5	4	.	7	.	. . .	43	8	.	.
Blow-offs and Manholes	.	1	.	1	.	.	.	. .	. . .	.	. .	.	. . .	. . .	.	.	.
Plugs	.	.	.	. .	.	.	.	. .	. . .	.	. .	.	. . .	6	8	.	.
Thawing Clamps	.	.	.	. .	.	.	.	. .	10	.	. .	.	. . .	25	14	.	.
Stopcocks	.	1	1	4	2	3	.	3	10	.	. .	1	. . .	74	54	.	.

Hydrants. — 56 Lowry, 27 Lowry extensions, 3 Lowry chucks, 48 Lowry frames and covers, 4 Lowry barrels, 12 Lowry caps, 10 round covers, 35 Wilmarth, 1 Wilmarth and 16 Lowell (old), 1 wharf hydrant.

For Hydrants. — 26 bends, 41 lengtheners, 49 covers, 86 wastes, 21 nipples, 16 socket nuts, 42 rods, 10 wharf

hydrant cocks, 75 brass tubes, 40 nuts, 50 stuffing boxes, 26 valve seats, 42 rubber valves, 25 leather rings, 32 screws, 16 heavy frames and covers, 47 frames, 73 covers, 2,898 pounds iron castings, 61 pounds composition ditto, 72 pairs straps, 21 pounds Babbitt metal.

For Stopcocks. — 2 36-inch screws, 3 30-inch ditto, 3 24-inch ditto, 2 20-inch ditto, 1 16-inch ditto, 1 4-inch ditto, for waste wire, 1 ditto for Brookline reservoir (old), 45 composition screws for 4-inch gates, 1 16-inch check valve, 19 6-inch valves, 52 6-inch rings, 59 4-inch ditto, 60 6-inch stuffing boxes, 23 4-inch ditto, 9,292 pounds iron casting for 6-inch gates, 5 frames, 5 covers.

Meters in Shop. — 3 3-inch, 10 2-inch, 13 1-inch, 136 $\frac{5}{8}$-inch.

Stock for Meters. — 5 2-inch nipples, 3 1-inch ditto, 30 $\frac{5}{8}$-inch ditto, 2 2-inch connection pieces, 8 1-inch ditto, 12 $\frac{5}{8}$-ditto, 46 1-inch cocks, 18 $\frac{5}{8}$-inch ditto, 1 4-inch clock, 1 3-inch ditto, 1 2-inch ditto, 10 1-inch ditto, 25 $\frac{5}{8}$-inch ditto, 8 brass spindles, 65 rubber nipples, 13 fish boxes, 12 covers, 9 glasses, 58 composition nipples unfinished.

For Service Pipe. — 4 3-inch union cocks, 94 1-inch ditto, 119 $\frac{3}{4}$-inch ditto, 1,350 $\frac{5}{8}$-inch ditto, 78 $\frac{1}{2}$-inch ditto, 39 1-inch air cocks, 32 1-inch T cocks, 47 $\frac{3}{4}$-inch ditto, 35 $\frac{5}{8}$-inch ditto, 55 $\frac{5}{8}$-inch Y cocks, 48 $\frac{5}{8}$-inch thawing cocks, 18 2-inch tubes, 96 $1\frac{1}{4}$-inch ditto, 74 1-inch ditto, 711 $\frac{5}{8}$-inch ditto, 15 $\frac{3}{4}$-inch ditto, 282 $\frac{1}{2}$-inch ditto, 24 2-inch nuts, 32 $\frac{3}{4}$-inch ditto, 18 2-inch couplings, 46 1-inch ditto, 60 $\frac{3}{4}$-inch ditto, 227 $\frac{5}{8}$-inch ditto, 300 $\frac{1}{2}$-inch ditto, 65 $\frac{5}{8}$-inch thawing couplings, 2,000 boxes, 44 T ditto, 30 Y ditto, 116 extension tubes, 2,200 tubes, 200 caps, 1,012 pounds unfinished composition castings 2 4 x 2 composition reducers, 9 3 x 2 ditto, 44 2 x $\frac{5}{8}$ inch ditto, 2 4-inch tunnel pipe, 7 3 x 2 iron reducers with 2-inch composition nipples, 41 1-inch plugs, 66 $\frac{3}{4}$-inch ditto, 81 $\frac{5}{8}$-inch ditto.

Lead Pipe. — 1,894 pounds 2-inch lead pipe, 3,080 pounds 1½-inch ditto, 1,225 pounds 1¼-inch ditto, 3,458 pounds 1-inch ditto, 4,228 pounds ¾-inch ditto, 28,175 pounds ⅝-inch ditto, 3,068 pounds ½-inch ditto, 1,291 pounds 1-inch tin lined ditto, 2,494 pounds ⅝-inch ditto, 742 pounds ½-inch ditto, 200 pounds ⅝-inch block tin pipe, 75 pounds solder, 455 pounds sheet lead.

Blacksmith Shop. — 1,300 pounds round iron, 860 pounds flat ditto, 100 pounds square ditto, 800 pounds working pieces, 400 pounds cast steel, 19 dozen pick blanks, 6,000 pounds Cumberland coal.

Carpenter's Shop. — 147 Lowry hydrant boxes, 5 ditto, unfinished, 168 stopcock boxes, 19 unfinished ditto, 84 hydrant boxes, 84 ditto unfinished, 2 meter boxes, 16 ditto unfinished, 1,200 pounds spikes and nails, 37,000 feet 2-inch spruce plank, 6,000 feet 1½-inch spruce batting, 35 1 foot pieces for raising hydrant boxes, 25 1 foot ditto, for stopcock boxes, 30 ditto for Lowry hydrant boxes, 60 feet hard wood plank.

Tools. — 1 steam engine, 1 large hoisting crane, 3 boom derricks, 6 hand geared derricks, 5 sets shears and rigging for same, 6 tool houses, 3 tool boxes, 2 platform scales, 1 portable blacksmith shop, 1 portable covering for Brewer fountain, 1 hand-roller, 1 horse ditto, tools for laying main and service pipes, 2 engine lathes, 1 foot ditto, 1 hand ditto, 1 Pratt and Whitney taper ditto, 1 chain hoisting gear, 1 upright drilling machine, 3 grindstones, 1 trip hammer, the necessary tools for carrying on the machine, blacksmith, carpenter and plumbing shops, 1 circular saw, 1 fan blower, 1 40-inch proving press, 1 36-inch ditto, 1 small ditto, 4 wheelbarrows, 400 feet old hose. Also a lot of patterns at the foundries where we obtain castings.

Stable. — 11 horses, 8 wagons, 3 buggies, 6 pungs, 1 sled, 1 cart, 12 sets harness, 22 blankets, 1 buffalo robe, 2 sleighs, 3 tons English hay, 80 bushels grain, 1½ tons straw.

Beacon Hill Reservoir. — 1 large composition cylinder, 16-inch jet, 1 6-inch composition jet, 3 composition plates, 9 cast-iron plates, 2 4-inch composition jets, 5 swivel pipe patterns, 1 2-inch copper straight jet, 6 composition jets for small fountains, 6 large composition cylinders.

Miscellaneous. — 64 tons pig lead, 10 gallons linseed oil, 2 barrels kerosene oil, 150 tons furnace coal, 1 freight gravel, 1,000 paving brick, 110 pounds lead washers, lot of paving stones, 52 reservoir covers, 40 cords of wood, 6 manholes, 5 plates, lot of old lumber. Also old machinery from Marlboro.

Respectfully submitted,

E. R. JONES,

Sup't Eastern Division.

REPORT OF THE SUPERINTENDENT OF THE WESTERN DIVISION.

OFFICE SUPERINTENDENT WESTERN DIVISION,
BRIGHTON, May 1st, 1873.

CHARLES H. ALLEN, ESQ.,
President of the Cochituate Water Board: —

SIR, — In compliance with the rules of the Water Board, the following report is submitted: —

LAKE COCHITUATE.

Work was commenced April 15th, 1872, to connect Farm Pond and the Sudbury River, with the lake. The work was completed, and the water turned into the lake, the 25th of June. Beaver Brook was cleaned out, made deeper and wider from the Walker mill privilege to the intersection of the trench dug from Farm Pond; length of trench about four miles, one mile required to be close-sheeted with 2-inch plank. Three flumes were built, and two stone culverts, under the town roads; two dams, one at the inlet of Farm Pond, and one on the Sudbury River, a short distance below the bridge of B., C. & F. R. R. The work was done under the direction of J. P. Davis, Esq., City Engineer. The water was run through the trench from June 25th until September 17th; the stop planks were then put in, and no water has been run into the lake from that time. From May 28th to June 1st, 1872, the water in the lake was 4 feet 10 inches above the bottom of the conduit. This was the lowest point reached during the year; it gradually rose, and on the 15th of Novem-

ber it stood at 13 feet 1 inch. Orders were then given to keep it down to 12 feet 6 inches, and it was held near that point during the winter, and on April 30th, 1873, it was 13 feet 1 inch. The number of days that the water has run to waste will be shown in the report of the City Engineer. The engines and pumps have been removed, and stored; the gate-house repaired, and cleaned; the usual attention given to the grounds and fences connected with the lake. I would call your attention to the house occupied by the attendant; as it would not be economy to repair it, I would recommend that a new house be built, in a more favorable location for health, or, if built on the site of the present one, that it be raised, at least, three feet, so as to obtain more perfect drainage.

CONDUIT.

The water has been drawn off from the conduit twice during the year, October 12th and 13th, to make the annual examination, which occupied two days. A very thorough examination was made, in company with the City Engineer, Clerk of the Board (and for three miles with some members of the Board). The section between the gate-house and the waste weir at Dedman's Brook was found very foul, being covered with a vegetable growth, and a great deal of sand on the bottom of the conduit, that was carried in by the pumps; from Dedman's Brook to the Chestnut Hill Reservoir it was quite clean; no new cracks were discovered, and no apparent change in the old ones. Measurements were taken by the City Engineer to see if the conduit had settled, so as to change its shape to any extent. It was found to be in a very good condition. October 25th, the water was drawn off and kept off for four days, and the section that required to be cleaned was attended to. The waste weirs are all in order; the doors and gratings will require painting during the season, to keep them so.

CHESTNUT HILL RESERVOIR.

Everything connected with the reservoir is in order; the gate-houses have been cleaned of the rust and cement that covered the stone-work, and the joints repointed where it was needed; stop-plank have been made for the effluent gate-house, to be used should they be required, until suitable gates can be made and put in, as recommended by the City Engineer. There has been no occasion to shut off the water, or to make any change in the gates the past year. The variation of the water was three feet; highest point, 24 feet; lowest, 21 feet. The embankments are all in good order; no appearance of any leak has ever been seen. The bank on the west side of the Lawrence basin has been graded and improved; the two ledges that were left above the level of high water in the Bradlee basin have been taken down, so as to be covered with a depth of twenty inches at high water. The drive-way has not had any repairs on it; no suitable material can be obtained in this vicinity, and I would recommend starting the crushing-machine, and dress the drive-way with stone crushed very fine, as there is an abundance of material at hand; the expense would not differ much from the cost of gravel.

BROOKLINE RESERVOIR.

This reservoir has received the usual care and attention. The wall and fence on Dudley street have been completed and painted. The arrangements were made to clean this basin in November, and the water was drawn down for that purpose, when the fire of November 9th occurred, and it was not thought advisable to do it. The basin was filled again, and connected with the supply. Annexed, will be found the height of water at the Bradlee basin during the year, also the account of tools, etc.

Respectfully submitted,

A. STANWOOD,

Sup't Western Division.

Height of Water at the Bradlee Basin, above the lower floor, at the Effluent Gate-House.

DATE.	Height of Water.	DATE.	Height of Water.	DATE.	Height of Water.
1872.	*Ft. In.*	1872.	*Ft. In.*	1872.	*Ft. In.*
May 1	23 4½	June 1	23 5½	July 1	23 2
" 2	23 5	" 2	23 4½	" 2	23 1½
" 3	23 5½	" 3	23 5	" 3	23 0¾
" 4	23 6	" 4	23 5	" 4	23 0
" 5	23 6½	" 5	23 4½	" 5	23 0½
" 6	23 7	" 6	23 5½	" 6	23 0¼
" 7	23 7½	" 7	23 6½	" 7	22 11½
" 8	23 7¾	" 8	23 7	" 8	22 11
" 9	23 8	" 9	23 6	" 9	22 11
" 10	23 8	" 10	23 6	" 10	22 10¼
" 11	23 8	" 11	23 6	" 11	22 10
" 12	23 8	" 12	23 5½	" 12	22 9½
" 13	23 8¼	" 13	23 5	" 13	22 9
" 14	23 8	" 14	23 4½	" 14	22 8½
" 15	23 7¾	" 15	23 4½	" 15	22 8½
" 16	23 7½	" 16	23 4	" 16	22 8¼
" 17	23 7¼	" 17	23 3½	" 17	22 8¾
" 18	23 6¾	" 18	23 3½	" 18	22 6¼
" 19	23 5½	" 19	23 3½	" 19	22 6½
" 20	23 5	" 20	23 4	" 20	22 6¾
" 21	23 6	" 21	23 3½	" 21	22 7
" 22	23 5½	" 22	23 3	" 22	22 7
" 23	23 6	" 23	23 2	" 23	22 7¾
" 24	23 6	" 24	23 2	" 24	22 8
" 25	23 5½	" 25	23 2	" 25	22 8¼
" 26	23 6	" 26	23 3½	" 26	22 8¼
" 27	23 6	" 27	23 3½	" 27	22 9
" 28	23 6¼	" 28	23 3	" 28	22 9¼
" 29	23 6	" 29	23 2	" 29	22 9¾
" 30	23 6	" 30	23 1¾	" 30	22 10
" 31	23 6	.....	.....	" 31	22 9¾

Height of Water at the Bradlee Basin. — Continued.

DATE.	Height of Water.	DATE.	Height of Water.	DATE.	Height of Water.
1872.	*Ft. In.*	1872.	*Ft. In.*	1872.	*Ft. In.*
August 1 . . .	22 9¾	September 1 . . .	23 8	October 1 . . .	23 11½
" 2 . . .	22 10	" 2 . . .	23 8	" 2 . . .	23 11½
" 3 . . .	22 10	" 3 . . .	23 8	" 3 . . .	23 11½
" 4 . . .	22 10½	" 4 . . .	23 7¾	" 4 . . .	23 11½
" 5 . . .	22 11	" 5 . . .	23 7½	" 5 . . .	23 11¾
" 6 . . .	22 11	" 6 . . .	23 7½	" 6 . . .	23 11¾
" 7 . . .	22 10¾	" 7 . . .	23 7½	" 7 . . .	23 11¾
" 8 . . .	22 10½	" 8 . . .	23 7	" 8 . . .	24 0
" 9 . . .	22 10½	" 9 . . .	23 7½	" 9 . . .	24 0
" 10 . . .	22 10	" 10 . . .	23 7¼	" 10 . . .	23 11¾
" 11 . . .	22 10	" 11 . . .	23 7	" 11 . . .	23 11½
" 12 . . .	22 10¼	" 12 . . .	23 7	" 12 . . .	23 8
" 13 . . .	22 10¼	" 13 . . .	23 6¾	" 13 . . .	23 2
" 14 . . .	22 10¼	" 14 . . .	23 7	" 14 . . .	22 11
" 15 . . .	23 0	" 15 . . .	23 6½	" 15 . . .	23 1
" 16 . . .	23 0	" 16 . . .	23 8	" 16 . . .	23 1½
" 17 . . .	23 2	" 17 . . .	23 10	" 17 . . .	23 2
" 18 . . .	23 3¼	" 18 . . .	23 10½	" 18 . . .	23 2½
" 19 . . .	23 3¼	" 19 . . .	23 11	" 19 . . .	23 3¼
" 20 . . .	23 3½	" 20 . . .	24 0	" 20 . . .	23 4
" 21 . . .	23 3¼	" 21 . . .	23 11¾	" 21 . . .	23 5
" 22 . . .	23 3¼	" 22 . . .	23 11	" 22 . . .	23 5¼
" 23 . . .	23 6	" 23 . . .	23 11½	" 23 . . .	23 5½
" 24 . . .	23 6	" 24 . . .	23 11¼	" 24 . . .	23 6
" 25 . . .	23 5¾	" 25 . . .	23 11¼	" 25 . . .	23 5½
" 26 . . .	23 6	" 26 . . .	23 11	" 26 . . .	23 4½
" 27 . . .	23 6	" 27 . . .	23 11	" 27 . . .	23 2
" 28 . . .	23 5¾	" 28 . . .	24 0¼	" 28 . . .	22 10½
" 29 . . .	23 5½	" 29 . . .	24 0	" 29 . . .	22 5½
" 30 . . .	23 6¼	" 30 . . .	24 0	" 30 . . .	22 1
" 31 . . .	23 8	. . . . .	. . . . .	" 31 . . .	22 0

Height of Water at the Bradlee Basin. — Continued.

DATE.	Height of Water.	DATE.	Height of Water.	DATE.	Height of Water.
1872.	*Ft. In.*	1872.	*Ft. In.*	1873.	*Ft. In.*
Nov. 1 . . .	22 1½	December 1 . . .	22 1	January 1 . . .	22 0
" 2 . . .	22 3	" 2 . . .	22 0½	" 2 . . .	21 11¼
" 3 . . .	22 5	" 3 . . .	22 1	" 3 . . .	21 10¼
" 4 . . .	22 7	" 4 . . .	22 1¼	" 4 . . .	21 10¼
" 5 . . .	22 8¼	" 5 . . .	22 1½	" 5 . . .	21 10
" 6 . . .	22 10	" 6 . . .	22 2	" 6 . . .	22 0¼
" 7 . . .	23 0	" 7 . . .	22 2½	" 7 . . .	22 0
" 8 . . .	23 3¼	" 8 . . .	22 3½	" 8 . . .	22 0
" 9 . . .	23 4	" 9 . . .	22 4½	" 9 . . .	22 0
" 10 . . .	23 1½	" 10 . . .	22 5¾	" 10 . . .	22 0
" 11 . . .	23 1	" 11 . . .	22 5	" 11 . . .	21 11½
" 12 . . .	23 0	" 12 . . .	22 5	" 12 . . .	21 10½
" 13 . . .	22 10	" 13 . . .	22 5	" 13 . . .	21 10
" 14 . . .	22 8	" 14 . . .	22 5	" 14 . . .	21 9
" 15 . . .	22 6	" 15 . . .	22 5¼	" 15 . . .	21 9
" 16 . . .	22 4	" 16 . . .	22 5½	" 16 . . .	21 8¾
" 17 . . .	22 3	" 17 . . .	22 5¾	" 17 . . .	21 9
" 18 . . .	22 2	" 18 . . .	22 6	" 18 . . .	21 11
" 19 . . .	22 0½	" 19 . . .	22 6½	" 19 . . .	22 0
" 20 . . .	21 11½	" 20 . . .	22 7½	" 20 . . .	22 0
" 21 . . .	21 10½	" 21 . . .	22 8½	" 21 . . .	21 11½
" 22 . . .	22 0	" 22 . . .	22 9	" 22 . . .	22 0
" 23 . . .	22 0	" 23 . . .	22 9¼	" 23 . . .	22 0
" 24 . . .	22 0	" 24 . . .	22 9	" 24 . . .	22 0
" 25 . . .	22 0	" 25 . . .	22 8	" 25 . . .	22 0¼
" 26 . . .	21 11½	" 26 . . .	22 6	" 26 . . .	22 0¼
" 27 . . .	21 11½	" 27 . . .	22 6	" 27 . . .	22 0¼
" 28 . . .	21 11½	" 28 . . .	22 4½	" 28 . . .	22 0¼
" 29 . . .	21 11¾	" 29 . . .	22 2½	" 29 . . .	22 0¼
" 30 . . .	22 0½	" 30 . . .	22 2	" 30 . . .	21 11
. . . . .	. . . . .	" 31 . . .	22 0½	" 31 . . .	21 11

Height of Water at the Bradlee Basin. — Continued.

DATE.	Height of Water.	DATE.	Height of Water.	DATE.	Height of Water.
1873.	*Ft. In.*	1873.	*Ft. In.*	1873.	*Ft. In.*
Feb. 1	21 8¾	March 1	21 1	April 1	21 11½
" 2	21 8¼	" 2	21 1	" 2	22 0
" 3	21 8	" 3	21 1	" 3	22 0½
" 4	21 7	" 4	21 1½	" 4	22 1½
" 5	21 7	" 5	21 1	" 5	22 2
" 6	21 6¾	" 6	21 0	" 6	22 2½
" 7	21 6½	" 7	21 0	" 7	22 3½
" 8	21 7½	" 8	21 0	" 8	22 4
" 9	21 7½	" 9	21 0	" 9	22 4¼
" 10	21 7½	" 10	21 0	" 10	22 5
11	21 6½	" 11	21 0	" 11	22 5½
" 12	21 5½	" 12	21 1	" 12	22 6
" 13	21 5	" 13	21 1	" 13	22 7½
" 14	21 4½	" 14	21 1¼	" 14	22 9½
" 15	21 4	" 15	21 0½	" 15	22 10
" 16	21 3½	" 16	21 2½	" 16	22 10½
" 17	21 4½	" 17	21 3	" 17	22 10¾
" 18	21 4½	" 18	21 3	" 18	22 11½
" 19	21 4½	" 19	21 3¼	" 19	23 0
" 20	21 4½	" 20	21 3¾	" 20	23 0¾
" 21	21 4¼	" 21	21 5½	" 21	23 1½
" 22	21 5	" 22	21 6	" 22	23 2
" 23	21 5	" 23	21 6	" 23	23 2
" 24	21 4½	" 24	21 6½	" 24	23 2
" 25	21 3	" 25	21 7	" 25	23 2
" 26	21 2	" 26	21 7¼	" 26	23 2
" 27	21 1	" 27	21 7½	" 27	23 2
" 28	21 1	" 28	21 8	" 28	23 2¼
. . . . .	. . . . .	" 29	21 8	" 29	23 2¼
. . . . .	. . . . .	" 30	21 10	" 30	23 2¼
. . . . .	. . . . .	" 31	21 11	. . . . .	. . . . .

Schedule of Property at Chestnut Hill Reservoir.

1 two-horse express-wagon.
1 single horse express-wagon.
1 water cart, with shafts.
2 two-horse water carts (new).
2 " " " (old).
2 " iron rollers.
8 new castings for rollers.
1 single horse pung.
1 two " "
1 horse truck.
1 " power.
1 hay wagon.
2 hand carts.
1 ox sling.
1 pair large wheels.
3 clay mills and shafting.
1 large water cistern.
1 stone drag.
6 screens.
40 ox-tie chains.
2 7-inch rotary pumps.
2 4 " " "
2 Joyce force, "
1 house pump.
1 steam engine.
1 stone-crushing machine and castings.
2 blacksmith's forges and tools.
1 derrick and rigging.
4 clay knives.
4 grub axes.
90 picks.
48 shovels.

6 spades.
11 long-handle spades.
6 new snow shovels.
3 hoes.
35 iron bars.
7 stone hammers.
6 striking hammers.
13 iron rakes.
7 scuffling hoes.
3 border knives.
1 root-puller.
1 pair grass shears.
5 scythes and snaiths.
13 wooden rakes.
11 wooden pails.
3 lawn-mowers.
1 garden engine.
4 hay forks.
9 lanterns.
4 reflector lanterns.
1 large reflector lantern.
8 peat knives.
22 tin dippers.
23 " candlesticks.
11 barrels cement.
11 long drills.
23 short "
9 wooden rammers.
2 grindstones.
3 jack screws.
chains.
4 pieces rubber hose.
2 " belting.
2 whitewash brushes.
6 paint brushes.

1 wooden brush.
1 wood saw.
10 ice chisels.
3 ice saws.
1 cross-cut saw.
3 telegraph batteries.
1 set scales and weights.
1 rain gauge.
75 feet 4-inch flange pipe.
36 " 8 " " "
1 12-inch quarter turn.
12 feet 18-inch Scotch pipe.
30 " 15 " " "
15 " 30 " cement pipe.
5 " 9 " " "
2 horses, 2 harnesses.
1 Concord wagon.
1 covered "
1 carryall.
5 stoves.
1 safe.

At Brookline Reservoir.

1 stove and funnel.
2 settees.
2 lamps.
1 spittoon.
2 shovels.
1 hay rake.
1 iron rake.
1 pick.
1 border knife.
1 pail.
2 ladders.
1 coal hod.

1 broom.
2 floor mats.
1 scythe and snaith.
1 basket.
1 desk.
1 oil can.

Schedule of Property at South Framingham.

102 shovels.
20 long-handle spades.
16 stone hammers.
15 axes.
15 wheelbarrows.
85 picks.
31 grub axes.
4 stoves.
4 chains.
70 pair rubber boots (poor).
7 sounding rods.
1 grindstone.
1 step ladder.
1 rain gauge.
1 camp tent and utensils.
3 bed springs.
8 blankets.
7 mattresses.
6 bolsters.
17 pillows.
3 brooms.
1 brace and bitts.
2 hand saws.
1 screw driver.
1 chisel.
8 lanterns.
4 oil cans.

1 wash stand.
1 wash bowl.
1 water jar.
1 mirror.
6 tin dippers.
1 hatchet.
1 set blocks and falls.
lot ropes.
7 crowbars.
4 drag ropes.
5 augers.
3 ladders.
4 nail hammers.
1 timber roller.
4 pair stop plank hooks.
1 cart hook.
4 scrubbing brushes.
1 boat.
3 pair handcuffs.
1 map South Framingham.

Schedule of Property at Lake Cochituate.

1 extension table.
1 parlor table.
18 dining-room chairs.
1 wash bowl.
1 mirror.
1 cooking range.
2 settees.
1 horse.
1 carryall.
1 express wagon.
1 cart.
1 cart harness.
2 single harnesses.

1 buffalo robe.
1 pung.
1 rain gauge.
1 pair steel yards.
1 dung fork.
2 hay forks.
4 hay rakes.
2 iron-rakes.
6 hoes.
3 dung hoes.
6 picks.
5 iron bars.
4 ox chains.
1 grindstone.
2 gravel screens.
2 sand screens.
1 spirit level.
2 stone hammers.
1 sledge hammer.
2 ice chisels.
2 ice tongs.
16 water pails.
8 lanterns.
1 telegraph battery.
9 engine belts.
2 stop plank hooks.
4 whitewash brushes.
2 grass hooks.
1 boat.
2 25 horse-power steam-engines.
1 15 " " " "
1 12 " " " "
2 18-inch pumps.
2 12 " "

CIVIL ORGANIZATION OF THE WATER WORKS FROM THEIR COMMENCEMENT, TO MAY 1, 1873.

Water Commissioners.

NATHAN HALE, JAMES F. BALDWIN, THOMAS B. CURTIS. From May 4, 1846, to January 4, 1850.

Engineers for the Construction.

JOHN B. JERVIS, of New York, Consulting Engineer. From May, 1846, to November, 1848.

E. S. CHESBROUGH, Chief Engineer of the Western Division. From May, 1846, to January 4, 1850.

WILLIAM S. WHITWELL, Chief Engineer of the Eastern Division. From May, 1846, to January 4, 1850.

City Engineers having charge of the Works.

E. S. CHESBROUGH, Engineer. From November 18, 1850, to October 1, 1855.

GEORGE H. BAILEY, Assistant Engineer. From January 27, 1851, to July 19, 1852.

H. S. MCKEAN, Assistant Engineer. From July 19, 1852, to October 1, 1855.

JAMES SLADE, Engineer. From October 1, 1855, to April 1, 1863.

N. HENRY CRAFTS, Assistant Engineer. From October 1, 1855, to April 1, 1863.

N. Henry Crafts, City Engineer. From April 1, 1863, to November 25, 1872.

Thomas W. Davis, Assistant Engineer. From April 1, 1863, to December 8, 1866.

Henry M. Wightman, Resident Engineer at C. H. Reservoir. From February 14, 1866, to Nov. 1870.

Joseph P. Davis, City Engineer. From November 25, 1872, to present time.

After January 4, 1850, Messrs. E. S. Chesbrough, W. S. Whitwell, and J. Avery Richards, were elected a Water Board, subject to the direction of a Joint Standing Committee of the City Council, by an ordinance passed December 31, 1849, which was limited to keep in force one year; and in 1851 the Cochituate Water Board was established.

COCHITUATE WATER BOARD.

Presidents of the Board.

Thomas Wetmore, elected in 1851, and resigned April 7, 1856 * * . . . . . Five years.

John H. Wilkins, elected in 1856, and resigned June 5, 1860 * * . . . . . Four years.

Ebenezer Johnson, elected in 1860, term expired April 3, 1865 . . . . . Five years.

Otis Norcross, elected in 1865, and resigned January 15, 1867 . . . . One year and nine months.

John H. Thorndike, elected in 1867, term expired April 6, 1868 . . . . One year and three months.

Nathaniel J. Bradlee, elected April 6, 1868, and resigned January 4, 1871 . . Two years and nine months.

Charles H. Allen, elected from January 4, 1871, to present time.

Members of the Board.

Thomas Wetmore, 1851, 52, 53, 54 and 55 * * . Five years.
John H. Wilkins, 1851, 52, 53, *56, 57, 58 and 59 * * . . . . . Eight years.
Henry B. Rogers, 1851, 52, 53, *54 and 55 . . Five years.
Jonathan Preston, 1851, 52, 53 and 56 . . . Four years.
James W. Sever, 1851 . . . . . One year.
Samuel A. Eliot, 1851 * * . . . . .
John T. Heard, 1851 . . . . . One year.
Adam W. Thaxter, Jr., 1852, 53, 54 and 55 * * . Four years.
Sampson Reed, 1852 and 1853 . . . . Two years.
Ezra Lincoln, 1852 * * . . . . . One year.
Thomas Sprague, 1853, 54 and 55 * * . . . Three years.
Samuel Hatch, 1854, 55, 56, 57, 58 and 61 . . Six years.
Charles Stoddard, 1854, 55, 56 and 57 * * . . Four years.
William Washburn, 1854 and 55 . . . . Two years.
Tisdale Drake, 1856, 57, 58 and 59 * * . . Four years.
Thomas P. Rich, 1856, 57 and 58 . . . . Three years.
John T. Dingley, 1856 and 59 . . . . Two years.
Joseph Smith, 1856 . . . . . Two months.
Ebenezer Johnson, 1857, 58, 59, 60, 61, 62, 63 and 64 . . . . . Eight years.
Samuel Hall, 1857, 58, 59, 60 and 61 * * . . Five years.
George P. French, 1859, 60, 61, 62 and 63 . . Five years.
Ebenezer Atkins, 1859 * * . . . . . One year.
George Dennie, 1860, 61, 62, 63, 64 and 65 . . Six years.
Clement Willis, 1860 . . . . . One year.
G. E. Pierce, 1860 . . . . . One year.
Jabez Frederick, 1861, 62 and 63 * * . . . Three years.
George Hinman, 1862 and 63 . . . . Two years.
John F. Pray, 1862 . . . . . One year.
J. C. J. Brown, 1862 . . . . . One year.
Jonas Fitch, 1864, 65 and 66 . . . . Three years.
Otis Norcross, * 1865 and 66 . . . . Two years.
L. Miles Standish, 1860, 61, 63, 64, 65, 66 and 67 . . . . . Seven years.

JOHN H. THORNDIKE, 1864, 65, 66 and 67	Four years.
CHARLES R. MCLEAN, 1867	One year.
BENJAMIN F. STEVENS, 1866, 67 and 68	Three years.
WILLIAM S. HILLS, 1867	One year.
CHARLES R. TRAIN, 1868	One year.
JOSEPH M. WIGHTMAN, 1868 and 69.	Two years.
BENJAMIN JAMES, * 1858, 68 and 69.	Three years.
FRANCIS A. OSBORN, 1869	One year.
WALTER E. HAWES, 1870	One year.
JOHN O. POOR, 1870	One year.
HOLLIS R. GRAY, 1870	One year.
NATHANIEL J. BRADLEE, 1863, 64, 65, 66, 67, 68, 69, 70, 71	Nine years.
GEORGE LEWIS, 1868, 69, 70, 71	Four years.
SIDNEY SQUIRES, 1871	One year.
AMOS L. NOYES 1871, 72.	Two years.
CHARLES H. HERSEY, 1872	One year.
CHARLES H. ALLEN, 1869, 70, 71, 72	*Present Board.*
ALEXANDER WADSWORTH, * 1864, 65, 66, 67, 68, 69, 72	
JNO. A. HAVEN, 1870, 71, 72	
EDWARD A. WHITE, 1872	
LEONARD R. CUTTER, 1871, 72	
EDWARD P. WILBUR, 1873	
WM. G. THACHER, 1873	

* Mr. John H. Wilkins resigned Nov. 15, 1854, and Charles Stoddard was elected to fill the vacancy. Mr. Henry B. Rogers resigned Oct. 22, 1865. Mr. Wilkins was re-elected Feb., 1856, and chosen President of the Board, which office he held until his resignation on June 5, 1860, when Mr. Ebenezer Johnson was elected President, and on July 2, Mr. Miles Standish was elected to fill the vacancy occasioned by the resignation of Mr. Wilkins. Otis Norcross resigned Jan. 15, 1867, having been elected Mayor of the city. Benjamin James served one year, in 1858, and was re-elected in 1868. Alexander Wadsworth served six years, 1864–69, and was re-elected in 1872.

* * Deceased.

COCHITUATE WATER BOARD, 1873.

JNO. A. HAVEN, President.

LEONARD R. CUTTER, of the Board of Aldermen.

EDWARD P. WILBUR,
WM. G. THACHER, } Of the Common Council.

AT LARGE.

For One Year.	For Two Years.
JOHN A. HAVEN,	CHARLES R. MCLEAN,
EDWARD A. WHITE.	THOMAS GOGIN.

Clerk.

JOSEPH A. WIGGIN.

Superintendent of the Eastern Division.

EZEKIEL R. JONES.

Superintendent of the Western Division.

ALBERT STANWOOD.

Water Registrar.

WILLIAM F. DAVIS.

City Engineer.

JOSEPH P. DAVIS.

STANDING COMMITTEES OF THE BOARD.

Eastern Division.

EDWARD A. WHITE, Chairman.
EDWARD P. WILBUR, THOS. GOGIN.

Western Division.

CHAS. R. McLEAN, Chairman.
LEONARD R. CUTTER, WM. G. THACHER.

Water Registrar's Department.

THOMAS GOGIN, Chairman.
WM. G. THACHER, EDWARD P. WILBUR.

On New Supply.

JOHN A. HAVEN, Chairman.
EDWARD A. WHITE, CHAS. R. McLEAN.